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THE

ETERNITY

OF THE

UNIVERSE.

BY

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WELLCOME
HISTORICAL
MEDICAL

INTRODUCTION.

THE fluctuation of human ſociety; the riſe and fall of empires; the alternate ſubverſion and revival of arts and ſciences; the production and diſſolution of the objects of exiſtence; the antiquity, revolutions, and formation of the globe that we inhabit; the tranſcendent and ſurrounding ſplendour and magnificence; the ſtars in all parts of the heavens brilliant and diſtinguiſhable, though in every age they have excited the curioſity and admiration of the ſpeculative and enlightened part of mankind, have never been ſufficiently underſtood nor elucidated.

Hence it is, that the exiſting monuments of literature afford but feeble aſ-

ſiſtance, and throw no eſſential light on the ſublime object of my ſpeculation; and that in writing on the eternity of the human ſpecies, the worlds, the ſuns, planets, and the brilliant ſcenes of the infinite and magnificent univerſe, (a ſubject inexpreſſibly important and extenſive in its nature, more nearly intereſting to every denomination of men than any that can poſſibly be the object of human diſquiſition) almoſt unaided, I am engaged in an arduous and intricate undertaking: An undertaking, indeed, to which, though my attention was firſt directed when young and inexperienced, I am too well convinced the profoundeſt, the moſt improved and mature judgment is unequal *.

* The antiquity and duration of the world, was publiſhed in the year 1780. The Eternity of the World in the year 1785.

The

The dawn of a bright day, that has ſucceeded to a long continued darkneſs, a better knowledge of the Univerſe, the rapid diffuſion of arts and ſciences, the excited curioſity and ſoftened diſpoſitions of mankind, give peculiar energy and propriety to this otherwiſe delicate diſcuſſion. At a period when a liberality of ſentiment predominates, when men emerging from obſcurity eagerly relinquiſh the errors and prejudices of their anceſtors, ſomething deſcriptive of the ſtability, the revolutions, the admirable wiſdom and diſpoſition of that ſtupendous exiſtence, of which we form a ſmall but neceſſary part, ſeemed abſolutely wanting to give ſtill greater force and conſiſtence to the reaſonings and ſpeculations of mankind.

The nature and extent of animal and vegetable life; the continual fluctuation of

matter; the unceaſing changes and events that are for ever taking place; the unbounded wiſdom, goodneſs, and intelligence ſtrikingly conſpicuous; the eternity of the earth, the ſtarry worlds and other innumerable and ſplendid ſcenes of exiſtence, are the ſublime and important objects of the ſucceeding enquiry.

I have ſought for truth, and for the juſt ſyſtem of the univerſe,—not indeed in the opinions of mankind—but in every ſtep have been guided by the conviction of my own judgment,—by plain ſenſe, and the moſt ſimple matters of fact. Nor can there exiſt a doubt, that, by thus giving a ſcope to cool and liberal inveſtigation, the deareſt intereſts and the happineſs of the human ſpecies have been eſſentially conſulted. To what purpoſe can it be, that the deſponding prejudices and errors of dark ages, ſhould

ſhould influence the reaſonings of men, who live at a time when every thing is ſo much reverſed? Truth animates exiſtence, and gives a luſtre to the human mind,—it never injures mankind. Ignorance, obſcurity, and ſuperſtition alone, engender the miſchiefs which diſturb ſociety.

In this enquiry I have endeavoured to trace, from the moſt curious and undiſputed natural facts, the great, the unqueſtionable antiquity and fluctuation of ſurrounding objects; facts which, at the very time they ſuggeſt an aſtoniſhing ſucceſſion of events, and open the brighteſt proſpects of ſtupendous and ſublime exiſtence, moſt ſtrongly ſupport me in the concluſion that the world and all things are eternal. A CONCLUSION THAT SUBVERTS NOT, BUT ESTABLISHES THE FONDEST WISHES OF MANKIND. IMPERFECT IN OUR MENTAL AND CORPOREAL EXIST-

ENCE; OPPRESSED WITH MANY EVILS; AND FORCIBLY RETAINED IN A NECESSARY BUT OBSCURE REGION OF AN UNIVERSE, TRANSCENDENTLY MAGNIFICENT, A GLIMMERING ONLY OF OUR FUTURE SPLENDOUR IS PERCEPTIBLE. THE TORMENT OF DISSOLUTION, MELANCHOLY BUT DELUSIVE FEARS, AND A FOND ATTACHMENT TO A FEW UNSUBSTANTIAL TRANSITORY PLEASURES, ARE PLACED AS BARRIERS TO IMPEDE OUR PASSAGE TO THE REALMS OF BLISS, AND DARKEN THE PROSPECT OF UNFADING GLORY. WE DIE TO LIVE; TO SHINE WITH DAZZLING LUSTRE; AND TO ENJOY A PERMANENT AND SUBSTANTIAL HAPPINESS.

Here it must be confessed, that independent of the interesting considerations already enumerated, there are other objects nearly connected with the design of this performance. The baneful and gloomy

influence

influence of barbariſm and ſuperſtition on the human mind, leſs prevalent than formerly,—among thoſe numerous nations, the offsprings of the rude uncultivated people, that triumphed over the embelliſhments, the records and civilization of Greece and Rome,—but ſtill too univerſally and powerfully predominating, have been but ſparingly touched upon. The diſagreeable effects of miſtaken zeal and opinions, indeed, can ſcarcely be placed in too ſtriking a point of view. In a word, the morals and underſtandings of mankind, and the manners of ſociety, have been and are ſtill moſt materially injured, by circumſtances which the outcry of folly would deem eſſential to the exiſtence of ſociety itſelf.

Happy then ſhall I eſteem myſelf, if the ſucceeding obſervations—(while they illuſtrate

trate the aſtoniſhing ſublimity and ſplendour of the Univerſe; the antiquity and fluctuation of beings perpetually changing their manner of exiſtence, but never ceaſing to exiſt; the eternity of the ſtars and the ſuperior intelligences filling the immenſity of ſpace, and in duration equally endleſs)—have but a tendency to ſupport the cauſe of genuine virtue and humanity; to ſhake the fixed and the malevolent prejudices of mankind; to aſſuage the remaining turbulence of ignorance and error; and thus to ſmooth the way to that civilization and refinement, which not only enliven and give peculiar reliſh to the precious moments of exiſtence, but eſſentially contribute to the peace, ſafety, and welfare of the human ſpecies.

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THE ETERNITY OF THE UNIVERSE.

SECTION

The First.

HOW the Univerſe was firſt produced, or whether it had or had not a beginning; and whence we derive that being which enables us to reaſon concerning its revolutions and exiſtence, and to contemplate the ſurrounding ſplendour and magnificence, has ever been an object of anxious ſolicitude to mankind. Indeed

ſuch is the curioſity, the magnitude, and the importance of the ſubject, ſuch the conſequences that naturally reſult from the enquiry, that, in compariſon to it, every other ſpecies of ſpeculation ceaſes to be intereſting.

Reaſoning from their little experience, attached to human life, perſonifying their faculties and affections, the bulk of mankind loſe ſight of the dignity of exiſtence, and ſeem ever diſpoſed to produce the phantoms of their own creation, the perſonifications of their perfections and imperfections, as the cauſes of the world and the brilliant objects of the Univerſe. Hence it is, that the traditions concerning an original formation of things, have ever been connected with the various opinions of mankind; and that there exiſts no nation nor ſociety of people, without ſome con-

fuſed ideas, as to the circumſtances of the world and nature's firſt exiſtence!

Yet whatever motives might thus naturally induce mankind, in every age, to form miſtaken notions of the nature and origin of the Univerſe, the greater part of the human ſpecies, are altogether unequal to the taſk of reaſoning independently and pertinently, on a matter of the moſt intricate and profound inveſtigation. *Such* heedleſsly adopt the reigning principles, and diſtinguiſh not their glaring imperfections! Unfortunately the oral traditions of the unpoliſhed, and the written tracts of the civilized parts of the human ſpecies, in theſe particulars, have an equal pretenſion to refinement. Deſcending to the minuteſt circumſtances, the ſages of various countries, fix with certainty the extraordinary period that gave birth to the

bright and magnificent ornaments of the Univerſe, to the human ſpecies, the ſtars, and thoſe innumerable worlds and beings, that form the ſtupendous objects of exiſtence. With gravity can they deſcribe to us whence all things took their origin, and nature firſt was animated! How ſuns began to blaze in the ſpacious regions of the ſky, to diſpenſe their light and genial influence to ſurrounding and admiring exiſtences! And, dwelling ſtill more circumſtantially on the objects ſubmitted to their immediate inſpection, in the comparatively inſignificant world which they inhabit, they point out to us the very ſpot appropriated to the dawn of the exiſtence of mankind! Moſt intimately too are they acquainted with the actors in theſe ſcenes,—they know the duration, the little incidents of their lives,—they draw from circumſtances of their conduct the moſt important con-

cluſions, and they trace their own lineal deſcent from their firſt imaginary parents! In ſhort, theſe events are fixed either in the traditions, or the written hiſtories of their reſpective countries, with a chronological preciſion! Nor is it to be wondered at, if the ſtrangeſt inconſiſtencies occur in all theſe narrations. Fabricated in barbarous ages, or in the rude infancy of ſociety, they contradict in an uncommon degree the plaineſt and moſt ſimple truths of nature; and the ſenſible and philoſophical enquirer, from a thouſand ſources, is ſufficiently convinced, of the little dependence which ought to be placed upon the incoherent dreams and ſuperſtitions, or the rude contradictory aſſertions of mankind!

The vague ſtories then of nations, concerning the origin of the globe that we

inhabit, the ſun, ſtars, and thoſe innumerable worlds and beings, that are the ſplendid objects of the infinite and ſtupendous univerſe, ſhould be ranked among the groſſeſt errors of mankind. They only ſerve to ſhow us the operations of the human mind in barbarous ages, the ſuperſtitious folly that predominated. Content, in the courſe of the ſucceeding obſervations, to place this ſublime and intereſting ſubject, in its juſt point of view, I decline the unneceſſary diſcuſſion of the particulars of ridiculous opinions, however univerſally received. How little intereſting and tedious, indeed, would be the taſk of ſuch diſcuſſion! When each nation, each tribe, and ſociety of people, have their different ſyſtems and opinions, replete with contradictions and abſurdities, and equally undeſerving a particular attention!

Here

Here let me obſerve, that the love of truth, the magnitude and importance of the object, and the ardent deſire of being ſerviceable to mankind, even at the expence of their diſpleaſure, and againſt their inclinations, have induced me to aſſert *the Eternity of the Univerſe!* Indifferent to trifling conſiderations! Indeed what conſiderations ſhould induce me to loſe ſight of ſo ſublime and noble an object, when animated by a rectitude of intention! and influenced by thoſe humane and beneficent motives, which flow from the fulleſt conviction, that men are invariably virtuous in proportion as they have clear perceptions of things; that the true principles of morals, which neceſſarily originate from extended ſympathy, and the fineſt feelings of human nature, not only loſe their benign influence, but neither can be practiſed, enforced, nor underſtood, in an age

of barbariſm and ſuperſtition; that the human ſpecies in ſuch ineligible circumſtances, inſenſible to the ſoft impreſſions of humanity, miſtake the real objects of happineſs or virtue; that ſo far from protecting or enlivening the precious moment of exiſtence, they precipitate themſelves into gloomy melancholy or headlong deſtruction; and that nothing can be either beautiful or eſtimable, which has not for its baſis the ſolid foundations of nature and of truth.

SECTION

The Second.

THE bright and intereſting object of our ſpeculation, the eternity of the human ſpecies, of animated nature, the ſtars, the innumerable worlds, and their inhabitants, the beautiful and extended ſcenes of nature, I ſhall then endeavour to inveſtigate.

From the obſcure lights that the fleeting traditions, the hiſtories, the hieroglyphics of mankind, and the monuments of paſt and ſubverted civilization throw on the anti-

antiquity and exiſtence of the human ſpecies:

From an attentive examination of ſurrounding ſubſtances; and thoſe ſlow and intereſting revolutions, to which the world that we inhabit has been invariably ſubject:

From obſervations of the ſtars, the bright and diſtant objects of exiſtence, and the relative ſituation of the globe in the ſyſtem of the univerſe:

And after having dwelt upon the facts eſtabliſhing the remote exiſtence of the human ſpecies, the world, and of the beings which compoſe it, the revolutions and changes that are for ever taking place; and having extended our reſearches to the innumerable ſtars, their brilliant appendages,

dages, and to the wide expanſe of the univerſe; I ſhall ultimately, and from abſtracted reaſonings, endeavour ſtill more forcibly to point out, the *eternity* of men, animals, vegetables, earths, ſtones, minerals, the world, the ſuns, planets, and the Univerſe!

Thus is our attention firſt and neceſſarily attracted to the fleeting traditions, the hiſtories, the hieroglyphics of mankind, and to the monuments of paſt and ſubverted civilization. Sources, indeed, from whence we may expect to derive much matter of curious information as to the exiſtence of the human ſpecies, and their paſt tranſactions; yet nothing ſatisfactory as to an extended ſucceſſion of events, and but preſumptive proofs of the eternity of the world and of the Univerſe.

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The arts of all others unqueſtionably the moſt important, as materially influencing the civilization, the manners, and the opinions of mankind, thoſe of regiſtering and communicating ideas and events, through the medium of literary characters, and thus conveying a knowledge of the tranſactions of paſt ages, of the ſtars, of the unceaſing operations of nature, the revolutions of the world and of the Univerſe to diſtant ages, would ſeem, from imperfect and ſuperficial obſervations, to have had their firſt exiſtence among thoſe ſwarms of inhabitants and innumerable nations, that for an incredible ſucceſſion of ages, have occupied the interior and the different diſtricts of Aſia. The extended views, however, that I have taken of exiſtence, in the diſcuſſion of the ſublime and intereſting object of our ſpeculation, afford lights the moſt new and bril-

brilliant, and moſt ſtrikingly convince me, that mankind, in the torrent of time that carries off, abſorbs, and reproduces not only animated exiſtences, but every object and ſpecies of ſubſtance preſented to our inſpection, have ever fluctuated in their civilization, population and refinement; and that at particular and unfortunate periods, the arts of writing or of recording their ideas and tranſactions, might not only be confined to ſome minute corner of the world, but even abſolutely unknown and loſt to the exiſting nations; yet in a gradual ſucceſſion of ages, philoſophy, ſcience, arts, and letters, would again neceſſarily and gradually originate and diffuſe themſelves.

Theſe great and invaluable acquiſitions, like the powerful and cultivated empires of the world, which have their riſe, their pro-

progreſs, their declenſion, are, indeed, natural products of time,—ever ſubject to an unſpeakable change and revolution. And 'ere a people, in any age and country, or among any collection of individuals, could communicate their ideas by hieroglyphics, make the ſmalleſt progreſs in the art of writing, or be poſſeſſed of monuments of literature, a poſſeſſion that gives them ſo decided a ſuperiority in the ſcale of nature, an inconceivable ſucceſſion of ages muſt not only neceſſarily elapſe, but the arts of ſocial life have been eminently advanced. In proof of this the Mexicans, who, at the time of the diſcovery of America, and the ſubſequent ſubverſion of their empire, had gone ſome conſiderable lengths in many of the arts of poliſhed ſociety, had yet made no farther progreſs in the art of writing, than that of delineating, with various coloured feathers,

ideas

ideas of the objects, which they wished to represent. What then can we possibly expect to know with any certainty, of the antiquity and existence of mankind, or an extended succession of events, before the commencement of history! Or what dependence can be placed upon any other testimony of their past transactions! Indeed the existing monuments of literature,—the page of history itself, invaluable as it is, will ever afford but feeble assistance as to these inestimable and profound researches. For of those myriads of inhabitants and innumerable nations, that have come within the sphere of our limited observations, the greater part have existed destitute of civilization, hieroglyphics, histories, or any standing memorials whatever; and of the events that have been recorded by historians, half at least, are fabulous or little to be depended

pended on. Hence it is that knowledge obtained from the records of paſt ages, of the tranſactions of the human ſpecies, and the events that have taken place in the world, by the intelligent man, is received with the utmoſt diffidence and caution. But the accounts of things which flow from diſtant tradition, are well known to be the moſt glaringly abſurd, and to bring ſcarce a glimmering of truth to remote deſcendents.

Thus evidently is ſeen the impoſſibility of coming at any eſſential knowledge of the remote exiſtence of the human ſpecies, from the exiſting monuments of literature, or the ſource of human tradition. But independent of the abſolute neceſſity of an extended civilization, to give even the minuteſt origin to the art of writing, or of recording the ideas and tranſactions of man-

mankind, a little knowledge of the world is ſufficient to convince us, that human ſociety has been, and *is ſtill* in a continued and rapid revolution. Even our own limited experience, our hiſtories and traditions, ſuperficial and imperfect as they moſt certainly are, are yet abundantly ſufficient to convince us, that extended provinces and the cities of mankind are overwhelmed by inundations of the ocean, and the fiery torrents of volcanos, or ſhaken and abſorbed by the earthquakes and convulſions of nature; that empires riſe and fall; and that among the nations of the world, barbariſm and civilization, knowledge and ſuperſtition, perſecution and toleration, riches and poverty, alternately ſucceed each other. Is it poſſible then for us, from hiſtories and traditions ſo imperfect and ſuperficial, with little to aſſiſt us but our own limited obſervations and ex-

perience, to fix with certainty the changes and incidents that have happened to mankind, and to the globe that they inhabit, or that *may* or may not be expected to take place? Can we, amid daily revolutions, look backwards or forwards for but a few millions of years, and fix with the ſhadow of probability the ſtate of arts and ſciences, or of human ſociety at ſuch periods. And what, let me aſk, are millions of years, compared with the endleſs ſucceſſion of eternal exiſtence? The literary advances of the preſent day may fade, from incidents totally unforeſeen, by events which from the nature and conſtitution of things, unavoidably take place in the world, and of whoſe former exiſtence the exiſting records and experience can furniſh us with no example. Thus may our boaſted civilization at ſome future period no longer exiſt! Thus too may the arts and ſciences, at

pre-

preſent rapid in their improvement and diffuſion, and even the ſtately edifices ſuperbly decorated, the ſolemn temples, and the moſt celebrated and ſplendid cities of mankind, ſuffer a partial or total ſubverſion, and by convulſions and revolutions violent, indeed beyond our experience or conception, yet unequal to the deſtruction of the globe, or the whole of the human ſpecies!

It is well known, even from hiſtories and traditions, that we are at preſent poſſeſſed of, which can never reaſonably be eſteemed but of a modern date, or the moſt trifling and inſignificant antiquity, and which give us little or no inſight into the hiſtory of mankind, or the events that have taken place in the world, that the learning and the records of Greece and Rome, enterprizing nations, deſervedly ce-

lebrated, who raiſed themſelves by works of genius to a height of reputation they will long enjoy, and which have been the objects of ſuch juſt and univerſal admiration, together with all their civilization, their uſeful and refined accompliſhments, were in danger of being entirely deſtroyed by the irruptions and devaſtations of the northern and barbarous nations. Fortunately however, amid the general wreck, and though philoſophy, ſcience, arts, and letters, were long buried in the ruins of the Roman Empire, ſome few precious relics and monuments of their ineſtimable accompliſhments have been preſerved to us. Yet ruinous in their effects as theſe irruptions and depredations moſt undoubtedly were, they are yet trifling compared with what may be conceived to take place, from the contention of the elements, or the convulſions and revolutions of nature.

Convulſions and revolutions, indeed, with which our imperfect hiſtories and traditions furniſh us with no adequate teſtimony nor ſimilitude; but which the facts enumerated throughout the whole of this enquiry, and every appearance of the univerſe, lead us ſtrongly to ſuſpect both have exiſted, and will again exiſt, productive of the moſt natural but unexpected changes in the world. Had, however, the inroads of the northern nations continued a little longer, had they but been a little more violent and extenſive in their operations, ſhould we have known, what had paſſed among thoſe celebrated nations, even a few centuries before us, and in the vicinity of our native country? The Romans and the Greeks were but of yeſterday, and we by the mereſt accident in the world know a few of their tranſactions!

That perfection in the arts and ſciences is eſſentially dependent upon the ſtate of literature will be readily granted, could a people then be deprived of their literary refinement, without a conſiderable diminution of uſeful and elegant accompliſhments? A rapid decay of arts and ſciences, for inſtance, ſucceeded the partial ſubverſion of the Greek and Roman literature. For though the Gothic ages have left us ſtupendous edifices, the boldneſs and majeſty of which ſtill ſtrike the mind with awful veneration, are they not evidences of the barbariſm of the times, or monuments of ill directed zeal, and conſtructed but amid the ruins of taſte and elegance? When civilization, however, gradually takes place among a barbarous people, and inventions dependent on a civilized ſtate of ſociety, or ſlight circumſtances of improvement accidentally ſpring up, it is natural for

for people thus circumſtanced, to look upon their own refinement and diſcoveries with the utmoſt wonder and admiration, as events the moſt new and unheard of, or ſuch as had never before taken place among mankind.

Such then are the baſeleſs and the ſlippery foundations for the inconſiſtent arguments of thoſe, who turning the whole of their attention to the unintereſting annals of a few Eaſtern nations, illiterate and uncivilized, or to the momentary but ſplendid tranſactions of Greece and Rome, not only loſe ſight of the tranſactions of every ſurrounding nation, and of the ſlow, intereſting and uniform revolutions of the Globe, but of the ſun, planets, ſtars, and thoſe ſublime and innumerable exiſtences, that are the bright and magnificent appendages of the Univerſe.

SECTION

The Third.

THOUGH the Eternity of the World, and of the magnificent ſuns and exiſtences that blaze in the ſpacious regions of the Univerſe, will receive but feeble ſupport from any light that can be obtained from the dreams of ſurrounding nations; and though we cannot reaſonably expect to meet with any thing in the ſmalleſt degree ſatisfactory, as to the remote exiſtence of the human ſpecies, the revolutions of the world, and an extended ſucceſſion of events, from the exiſting monuments

numents of literature; yet, ſtill, it becomes matter of the utmoſt curioſity, to trace the hiſtory of mankind in diſtant ages; to attend to thoſe antient and precious memorials, that have eſcaped the deſtructive hand of time; and to inveſtigate the origin and antiquity, of the relics and veſtiges of paſt and ſubverted civilization, that every where preſent themſelves to our contemplation. Which nation, then, let me aſk, of thoſe at preſent exiſting, out of the vaſt aſſemblage, have records of the earlieſt date; or the juſteſt claim to remote and extended civilization and refinement? How inſuperable the difficulties to anſwer theſe ſimple queſtions, or to fix upon the ſociety of men among whom arts and ſocieties were firſt cultivated, whoſe written obſervations have ſurvived the revolutions of the world, or whoſe records are of the higheſt antiquity!

Nor,

Nor, indeed, is it eſſential to our purpoſe that we ſhould do ſo. This diſpute, could it be abſolutely determined, has not the ſmalleſt reference to the object of our enquiry, the *eternal* exiſtence of the human ſpecies. Never can it be other than matter of curioſity, and that curioſity could only point out to us a collection of individuals, who had an early pretenſion to extended refinement. Antecedent to them, other nations, muſt however, ſtill have exiſted, whoſe civilization and whoſe literature have been abſorbed or ſwallowed up in the convulſions and revolutions of the world.

The written mountains of Arabia, and the pyramids of Egypt, thoſe towering yet periſhable monuments of the ill-directed zeal or ambition of mankind, are the efforts of a people once partially enlighten-

ed.

ed. Unintelligible, however, as the inſcriptions and hieroglyphics moſt certainly are; yet, in all probability, ſome of the engravings in Arabia, and on the Granite of Egypt, may have, ſtill juſter claim to remote exiſtence, than any written books or records that are extant. But how ſtrongly muſt the futility of having recourſe on the ſubject of antiquity, to the records of mankind appear, ſince, as it will be the buſineſs of this enquiry to demonſtrate, the very materials of the pyramids, the written rocks themſelves, the mountains upon which ſuch engravings are viſible, the countries in which they are ſituated, and even the ſubſtances conſtituting the world and univerſe itſelf, have each of them been as progreſſively formed, and are ſubject to as gradual diſſolution and decay as were the engravers of the rocks, the pyramids, the mountains!

Then what are we to think of thoſe Europeans, with whom modern annals have made us acquainted? Nations, emerging from obſcurity, that a few centuries ago took their riſe from the ſwarms of thoſe northern and uncivilized people, that deluged the ſouthern parts of Europe, induſtriouſly and exultingly ſubverting and deſtroying the embelliſhments, and the exiſting monuments of literature! It is true that the dawn of a brighter day, has ſucceeded to the ſavage fierceneſs and unrelenting violence of the ſucceſsful depredators,—to the long and univerſal darkneſs! And that a better acquaintance with the world, improvements in every department of knowledge, and the rapid diffuſion of arts and ſciences, have ſoftened the minds of men, and heightened the delicate impreſſions of ſympathy and humanity? Virtues that promiſe to ſucceeding ages,

better

better and ſtill more peaceful enjoyment of the precious moments of exiſtence! May ſuch happy proſpects be realized! May the cauſes thus tending to enlighten and improve the human ſpecies, and to give to their minds a more tender touch of all that is endearing and eſtimable in life *ever* extend their benign influence! Yet alas! the fluctuation, the inſtability of every attainment, of every excellence, and every object of exiſtence promiſes no ſuch perpetuity!

How beautiful is cultivated nature! How brilliant and adorned thoſe pages of hiſtory in which man diveſted of his prejudices and ferocity ſhines forth the ornament and the pride of exiſtence! The earth rendered fertile and active, replete with ſmiling meadows, rich paſtures, and cultivated fields,—the deſerts converted into

ſcenes

ſcenes of extended population, adorned with villages and ſplendid cities,—flowers, fruits, and grains, matured and multiplied to infinity,—uſeful ſpecies of animals tranſported, propagated and increaſed,—communications every where eſtabliſhed,—the continents, iſlands, the new diſcovered countries explored,—the ocean ſubdued, inveſtigated, and traverſed,—the diſtant regions of the viewleſs air, its reſtleſs and aſpiring clouds, no longer inacceſſible, together with a thouſand other monuments of power and of glory, are the evidences of the union and the ſtrength of poliſhed ſociety. But theſe ſeem rather the flattering proſpects, and the extraordinary efforts, than the natural exertions or ſituation of the human ſpecies. Whenever vigilance and induſtry are interrupted, when men become enfeebled by luxury, and empires overthrown by mutual and inteſ-

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tine contentions, or by revolutions and convulſions of the globe violent beyond our experience and conception, and of which hiſtory and tradition can furniſh us with no adequate teſtimony nor ſimilitude, every thing gradually languiſhes, alters, and once more reverts to the abſolute dominion of nature. She reſumes her rights, defaces the embelliſhments of man,—covers with moſs and duſt his pompous and moſt towering monuments, which in the progreſs of time ſhe totally deſtroys—the hiſtory of his ſubverted ſplendour periſhes in the general wreck, the arts and ſciences are loſt, and the earth again becomes deſolate!

Great, however, as the late exertions have been, and ſoftened as the diſpoſitions of mankind moſt undoubtedly are, does not much ſtill remain to be effected? How

long

long have the enlightened and ineſtimable members of ſociety, yet to endure the frowns of ignorance! to feel their humane and brilliant exertions, rewarded with the cold and ſenſeleſs indifference, or the violent malignity of folly and ſuperſtition! In ſhort, trivial circumſtances alone firſt turned the eyes and undiſtinguiſhing credulity of mankind, to the dreams and incoherent notions of a ſmall ſociety of people, occupying an inſignificant diſtrict of Aſia! And do not a conſiderable portion of them, enlightened and civilized as they at preſent are, ſtill look upon the undigeſted memoirs of that barbarous nation, as deſcriptive of the hiſtory of mankind; and of the exiſtence and revolutions of the Univerſe! Have they not made a few thouſand years, the bounds of antiquity and of exiſtence; and do they not produce the written hiſtory of a tribe of

people,

people, illiterate and unpoliſhed, to detract from the age and ſplendour of the ſuns, worlds, and ſurrounding magnificence, and in ſupport of their inconſiſtencies!

The natives of China, whoſe government has long been eſtabliſhed, and who live in a beautiful and regular ſociety, have records of that antient date, which ought to have ſtaggered ſuch prevailing and ſuch ill grounded judgments. Many of their accounts, indeed, would appear to extend, as it has been repeatedly ſuggeſted, to an antiquity altogether inexplicable. Yet though the induſtrious inhabitants of this extenſive empire, may ſeem to have the moſt undiſputed claim, to an antient cultivation of the arts and ſciences, recent obſervations, and thoſe of a nature the moſt truly authentic, have ſtrongly at-

tracted peculiar, yet merited attention to other eaſtern nations. Writers of credit and diſtinction, whoſe particular ſituations in the Eaſt Indies gave them acceſs to ſuch intelligence, had long opened to us the unqueſtionable antiquity of the people of that country. Circumſtances have, however, recently tranſpired, which, though they confirm us in our ideas, that mankind in every age to which hiſtory or tradition can extend, have been numerouſly and extenſively diſperſed and propagated, and that they are not the offſpring of *yeſterday* as ſuperſtition would fondly teach us to conjecture; yet ſuch lights, curious and intereſting as they moſt certainly are, can never afford us but preſumptive proof of the *infinite* exiſtence of the human ſpecies, nor materially aſſiſt us in inveſtigating the ſublime and the important object of our enquiry.

SEC.

SECTION

The Fourth.

INDIA and the interior parts of Aſia, 'ere they attracted the enterprize and the arms of Greece, eſcaped not the profound and more eſtimable attention of one of the moſt diſtinguiſhed of her philoſophers. It was to theſe celebrated regions that Pythagoras reſorted for inſtruction. The extended population, the antiquity, the civilization of the inhabitants, had not only given to the oriental ſages a knowledge of aſtronomy, and the juſt ſyſtem of the Univerſe; but the great revo-

lutions of the globe, the tranſmutations of its ſubſtances, the ſlow and alternate formation and diſſolution of the innumerable objects of exiſtence, the ſea's perpetual change of ſtation, its depredations on the iſlands and continents, and gradual retreat from the diſtricts it formerly occupied, were truths, which, though imperfectly underſtood, an aſtoniſhing ſucceſſion of ages and experience had in a great meaſure eſtabliſhed *.

Yet though the juſt ſyſtem of the Univerſe, was thus known to the enlightened nations of antiquity, and was tranſplanted from the eaſt by Pythagoras, and though many of the followers of that admirable

* Ovid, when explaining the doctrines of Pythagoras, elegantly makes mention of thoſe ſlow and intereſting revolutions, to which the globe that we inhabit has been invariably ſubject.

philo-

philoſopher had ſuch correct and ſublime notions of the globe upon which they exiſted, and of the bright and diſtant objects of the eternal and magnificent Univerſe, that they not only taught, that the earth revolved daily on its own axis, and moved with a ſilent ſteady rotation annually round the ſun; that day and night, and the grateful viciſſitudes of the ſeaſons, were occaſioned by theſe two diſtinct revolutions; and gave ſuch a deſcription of comets, as is perfectly reconcilable to the modern obſervations and diſcoveries; and though they alſo taught, that every ſtar was a world, having elements correſpondent to our earth, and that the moon, in particular, had larger and more beautiful inhabitants; yet a ſyſtem ſo diametrically oppoſite to received opinions, and ſo extremely repugnant to the prejudices and common ideas of mankind, was never

univerſally adopted, nor made any conſiderable progreſs among the antient European nations; and that cloud of ſuperſtition and barbariſm, that, after the ſubverſion of the Roman Empire, darkened the weſtern world, not only led the Europeans to reject the ſublime truths of philoſophy, to detract from the age and ſplendour of the ſurrounding magnificence, and to deny the antiquity of the ſun, moon, ſtars, and the brilliant objects of the Univerſe, but to confine the exiſtence of the human ſpecies to the trifling limits of a few thouſand years!

The eſtabliſhments of the Europeans in India, and the great commercial intercourſe, which, from the improvements in navigation, within theſe few centuries has taken place with that diſtant country, while it afforded a more perfect know-

ledge

ledge of the hiſtory of Indoſtan, opened the great and unfathomable antiquity of its inhabitants. Unfathomable, however, as their remote exiſtence moſt certainly is, the tranſlation of the Gentoo laws evidently carries this curious ſubject to what ſome would be diſpoſed to call a ſingular extent. Yet ſuch limited antiquity can never ſurpriſe any but thoſe, who from the general nature of things, have not previouſly been prepared to look for ſome ſuch incident.

The judicious tranſlator * of theſe intereſting tracts, ſtruck with the ſcenes in which he had been long and intimately converſant, in his preliminary treatiſe, has made ſome pertinent obſervations. The Hindoos, as well as the Chineſe, ſays he,

* Mr. Halhed.

have ever laid claim to an antiquity infinitely more remote than is authoriſed by the belief of the reſt of mankind. It is certain, however, that theſe two nations have been acquainted with letters from a very early period, and that their annals have never been diſturbed nor deſtroyed by any known revolution. And though we may come to the peruſal of their records armed with every argument, and fortified even to prejudice againſt the admiſſion of their pretenſions, yet their plauſible accounts of thoſe remote ages, and their undeviating confidence in their own aſſertions, can never fail to make ſome impreſſion, and that in proportion as we gain a clearer inſight.

Like the reſt of mankind, the Gentoos, too, have rude ſketches of a firſt formation of the world, and of the univerſe. Their

Their fabulous and extravagant narrative obtains among them the moſt implicit credit, notwithſtanding it is evidently replete with glaring abſurdities.

The duration of the world, according to their chronology, is divided into four diſtinct periods. And they admit in the calculation of its age ſeven millions two hundred and five thouſand years! Days, years, and ages, conſtitute, however, no portion of the exiſtence of nature, they relate to beings whoſe exiſtence is tranſitory and changeable; and it is needleſs to ſay, that conjecture muſt unavoidably have taken place in this enumeration. But though error and ſuperſtition ſhould never meet with our approbation and applauſe; yet we cannot ſufficiently admire the ſagacity of men, who, in a point the moſt truly intereſting, approach ſomething nearer to ſub-

ſublimity, and the juſt ſyſtem of the univerſe, than the vain and ſuperſtitious inhabitants of a more weſtern continent!

Rajah Prickutt, continues our author, who, though ranked as a modern in the records of India, is yet known to have lived upwards of four thouſand years ago, was no leſs anxious than our modern philoſophers are in their chimerical attempts to pierce through the obſcurity of time, and to trace the progreſs of the world from its beginning or its infancy. At his inſtigation, a work was compoſed by a learned Bramin, containing the hiſtory of India through the preceding periods, with the ſucceſſion of the ſeveral Rajahs, and the duration of their reigns. This curious hiſtory ſtill ſubſiſts, divided into twelve books, and three thouſand and twenty chapters.

Yet while India thus affords a ſtriking leſſon of inſtruction to the better, and to the ſpeculative part of thoſe ſordid and ſuperſtitious Europeans, who, ſteeled againſt the ſoft impreſſions of humanity, exerciſe an unrelenting tyranny over a mild and inoffenſive people; the interior parts of Aſia held out, in former ages, to an enlightened and to an aſpiring nation, the enterprizing and the celebrated Greeks, monuments of the antiquity of the world and of the human ſpecies, no leſs diſtinguiſhed and eſtimable. At the time of Alexander's triumphant entry into Babylon, the Chaldean philoſophers reckoned four hundred and three thouſand years from the commencement of their aſtronomical obſervations *!

* Diodorus Siculus.

How

How ſingular then muſt all this appear to the nations whoſe ideas are cramped by the fetters of ſuperſtition! who have been taught from their infancy to believe, that nature is but in the very dawn of her exiſtence; and that a few thouſand years are the utmoſt extent of her duration: in ſhort, who, incapable of taking any extended views whatever, dream but of thoſe unmeaning incidents that have momentarily preceded their own. No ſooner indeed are they informed, that hiſtories ſtill exiſt, of no modern date, that the human ſpecies are natural to the ſyſtem of things, and that this ſyſtem, or the ſtupendous univerſe, is of antient exiſtence, than inſtantly they revolt at the idea; and placing confidence in the dreams of their ignorant predeceſſors, are inſenſible to the voice of reaſon, and to the ſimpleſt operations of nature. A very ſmall portion

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of reaſon and reflection, one might have thought, ſhould have convinced mankind, that millions of years are but as moments in duration; that the events that are daily obvious, are but the ordinary incidents that *ever* have happened, and *ever* will happen! Yet ſtill is it echoed by ſurrounding nations, partially enlightened, that nature laſts but for a time, that ſhe had a beginning as it were of yeſterday; and prophetically do they dream about the diſſolution of the exiſtence of nature!

How gladly then would deluded and ſuperſtitious parts of the human ſpecies impoſe upon the underſtandings of the reſt! —How ſtrenuous their exertions to degrade, to debaſe mankind! Fain would they perſuade us, that nature is but of ſome thouſand years duration; that the only human actors in exiſtence have been

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a few ſurrounding nations, a part of them triflingly civilized, and others totally abſorbed in the groſſeſt ignorance and barbariſm; ſome indeed poſſeſſed of undigeſted records, others, altogether devoid of them; and all of whoſe records, actions, and ideas, have but recently dawned upon their own.

Can then ſuch reaſoners poſſibly be ſaid to have any pretenſion to right reaſon? How blind to the nature of their own exiſtence! How totally deprived of any ſort of notion, either as to their relative ſituation in the ſcale of beings, the unceaſing revolutions and changes that are for ever taking place, the eternity of the human ſpecies, of the world, the ſuns, planets, and the univerſe!

SEC-

SECTION

The Fifth.

THE Egyptian, the Chaldean, Indian, Chineſe, or any exiſting traditions, records, or hieroglyphics, however high they may ſeem to extend, when compared with notions which generally prevail, in ſpite of every thing that is reaſonable or conſiſtent; yet, I flatter myſelf, the unprejudiced enquirer, will have been ſufficiently convinced, both from what has already been ſaid, and from his own obſervations, that human teſtimony or tradition, even granting them their utmoſt

moſt latitude, are but of the moſt limited extent; that it is only in the advanced ſtate of refinement, that the art of writing could, at any time, or in any country, poſſibly have taken its origin; and that this valuable acquiſition, important as it is, is ſubject to the moſt unſpeakable fluctuations.

In a word, barriers inſuperable ſeem to have been placed, to the extent of human records, and the progreſs of civilization. Thus the ſucceſſion of but a few millions of years, will inevitably involve the tranſactions of the preſent day, in impenetrable darkneſs! The arts and ſciences too, as it has been before ſuggeſted, when they arrive at the higheſt poſſible degree of perfection, from a concurrence of events, and the convulſions and revolutions the world is neceſſarily ſubject to, are evidently, perpetually,

petually, alternately, partially or totally deſtroyed and regenerated. The reaſonings in the preceding part of this enquiry ſupport me in theſe concluſions. The ſubverſion of the arts and ſciences of Greece and Rome, their ſubſequent revival, or the events even of a few centuries, which can never be conſidered but as moments in the amazing ſucceſſion of time, are, indeed, of themſelves ſufficient demonſtrations of the inſtability and fluctuation of human learning and refinement. And if this inſtability and fluctuation in the civilization and the records of mankind, have involved even the tranſactions of the exiſting nations in obſcurity; where ſhall we find memorials deſcriptive of immenſe ruins in the interior parts of Aſia, and of the veſtiges of paſt and ſubverted civilization, that are daily dug up from the bowels of the earth, and preſent themſelves in the

different regions of the world! Trees too have been met with conſiderably below the ſurface of the earth, converted into ſtone, with evident marks of being cut with hatchets previous to their petrifaction. The monuments, indeed, of civilization, are, generally ſpeaking, of a periſhable nature; ſcarcely do they ſurvive the people who framed them, being eaſily defaced and deſtroyed by time, and the violent operations of nature; yet every ſuch circumſtance is undoubted proof of the remote exiſtence of mankind, and of civilization having made conſiderable progreſs, in ages to which no records can extend. In ſhort, the arts and ſciences, the records and traditions of mankind, do but in a temporary and imperfect manner, preſerve the fleeting actions of mankind, and make them, as it were, for a moment ſurvive themſelves; as to the innumerable ages

of

of barbariſm and ignorance, the multiplied ſucceſſions of the unrecorded part of the human ſpecies, they emerge not from their oblivion. No ruins teach us to collect that they have exiſted; no columns, ſtatues, nor vaſes, drawn from the duſt of ages; no more traces of their exiſtence remain to us, than if they had never exiſted. Themſelves, the place, the time, the circumſtances of their paſſage, are for ever loſt to the reaſonings and to the contemplation of mankind.

Important and deciſive as ſuch a train of reaſoning certainly is, it ſeems not to have been ſufficiently attended to. From thence, however, may be inferred, and without the ſmalleſt hazard of plauſible contradiction, circumſtances of the moſt truly philoſophical nature. Independent of every other conſideration, what diſtin-

guiſhed light does it not throw on the eternity of the world and of the human race! For though the records and traditions of mankind, do but extend beyond momentary periods, yet is there room for reaſon's operation. She will be found to announce from an abſtracted view of nature, and the natural objects that this globe and univerſe every where preſent to our contemplation, that the human ſpecies, and the other branches of animated nature, fluctuating in their increaſe and decreaſe, their barbariſm and refinement, actually have flouriſhed, amid the ſuns, worlds, and unceaſing revolutions of nature, through an *eternity* of exiſtence.

SECTION

The Sixth.

THE traditions, the hiſtories, the exiſting yet ſubverted monuments of the paſt civilization and exiſtence of mankind, though they will for ever excite the admiration and attention of the contemplative and ſpeculative part of mankind; and afford preſumptive proof of the *unlimited* exiſtence of the human ſpecies; yet the extreme folly of expecting any thing eſſential to our purpoſe, either from the periſhable veſtiges of an advancement in the arts and ſciences in diſtant ages, the

traditions, or all that has been written by thoſe who have inconſiſtently been called the antient part of mankind, as to the circumſtances of their own or the world's *firſt* exiſtence, has been ſufficiently demonſtrated. If, however, the traditions, the hiſtories, the ſubverted embelliſhments and monuments of the civilization and remote exiſtence of the human ſpecies, afford me but feeble aſſiſtance, in tracing the ſublime object of our enquiry, the eternity of the world, and of the univerſe; it is otherwiſe with the revolutions and changes that inceſſantly take place in the productions, which nature has every where preſented to our admiration and inſpection. I come, therefore, to the ſecond, and, indeed to an important part of the enquiry, the lights that may be obtained of the eternity of the ſtars, the bright and diſtant objects of exiſtence, and the juſt

ſyſtem

ſyſtem of the univerſe, from an attentive examination of ſurrounding ſubſtances; and the ſlow and intereſting revolutions, that the *ſtar*, the planet, or the world which we inhabit, is more immediately ſubject to.

But in every part of that branch of natural knowledge, which our enquiry obliges me to have recourſe to, I cannot without aſtoniſhment reflect, that the moſt important truths appear not to have been ſufficiently known nor illuſtrated, neither by the exiſting inhabitants of the world, nor thoſe ſubverted yet recorded nations, who ſtill live in the annals and antient monuments of literature, that have eſcaped the revolutions of the world,—the mouldering and the deſtructive hand of time. Powerful and enlightened empires, or poliſhed ſocieties of people, have indeed *ever* ex-

iſted, whoſe knowledge of the univerſe, and advancement in the arts and ſciences, ſurvive not their faded, nor their tranſient glory, and whoſe hiſtory lies buried with their cities, temples, and their arms. It is true, that the great revolutions of the globe, were imperfectly underſtood by the eaſtern nations of antiquity; yet ſtill we remain ſtrangers as to the means by which they became at all acquainted with this intereſting branch of knowledge. Moderns therefore alone, and thoſe our immediate predeceſſors and contemporaries, ſeem to have poſſeſſed themſelves of facts of a new and extraordinary nature; though perhaps nothing can be poſſibly conceived more vague and undeciſive, than the little uſe that they have made of them.

The veſtiges, for inſtance, of the animals and vegetables, both of the land and ſea,

ſea, have been met with in the contexture of different ſpecies of ſtone, and other matter, conſtituting the various countries of the world. Yet what juſt concluſions have we been able to draw from ſuch ſingular appearances? What have the more enlightened done, from whom more might have been expected, but gazed with wonder and admiration, and confeſſed themſelves bewildered in a labyrinth of doubt and uncertainty? In ſhort, the clear and ſimple inferences that might have been deduced, have been loſt amid the dreams of ſyſtem, and of ſuperſtition.

In the largeſt bodies of lime-ſtone, marble, chalk, and calcareous earth, conſtituting the loftieſt mountains, and even whole countries of the world, the fiſhes, animals, and various productions of the ſea, continually preſent themſelves; and not,

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as one might be led to ſuſpect, in trivial portions, but, in many inſtances, forming even the very maſs itſelf of ſuch ſubſtances.

In ſtone too of a totally different nature from marble or lime-ſtone, vegetable impreſſions, and the remains of land animals are equally obvious.

How univerſal is the exiſtence of ſuch curious occurrences! How deciſive and important the philoſophy that they ſuggeſt! The appearance of animal impreſſions, in the contexture of different ſpecies of ſtone, demonſtratively indicates the progreſſive formation, not only of ſtone in general, but of the various countries of the world. It is unneceſſary to comment any farther, in this place, upon the preceding facts, or to dwell upon the various changes that ſuch

ſuch ſubſtances, when formed, are ſubject to; it is the object of the ſucceeding obſervations, to give a ſketch, however inadequate, of the important operations of nature, and of the eternal fluctuation of things.

It is neceſſary, however, to premiſe, that to ſpeculative minds natural facts, in variety of inſtances, have ever ſuggeſted their antiquity. Yet, whether from the limited extent of natural obſervations, or from that diffidence which ingenious men ſometimes find in entertaining ideas ſubverſive of the general opinions; moſt certain it is, that the very facts that ſuggeſted ſuch antiquity ſeem not to have been ſufficiently underſtood, neither as to the philoſophy thus unavoidably confirmed, nor that equally intereſting ſucceſſion of time, which

cool diſquiſition might have brought them to ſupport.

The ſlow progreſs of the formation, for inſtance, of earths, generated chiefly by the decay of land vegetables and animals, and, nevertheleſs, the abundant appearance of ſuch productions on the ſurface of repeated lavas, at a conſiderable depth, has ſuggeſted to ſome a limited antiquity. But what is the proportion of a few thouſand years, or even a more multiplied ſucceſſion of ages, compared with the endleſs ſucceſſion of eternal exiſtence,—the unbounded revolution of events? Or what extended ideas of antiquity can the operations of nature, upon the ſurface of a particular country afford, when the very ſubſtances compoſing the country itſelf are formed by ſlow operations, and in the infinite ſuc-

ceſſion

ceſſion of time, expoſed to diſſolution and innumerable tranſmutations?

Such facts, however curious in themſelves, will ever be found to prove but a limited and trifling antiquity. Yet when taken in a philoſophical point of view, when brought in ſupport of reaſonings of an extended and intereſting nature, they moſt undoubtedly become of the very firſt importance; and ever throw the ſtrongeſt light, both upon natural knowledge, and the whole ſyſtem of things. Independent of the unintereſting conſideration of limited periods of antiquity, ſuggeſted by the gradual formation of earths, generated principally from decayed land animals and vegetables, we have in ſuch inſtances a curious ſpecimen of the gradual advance of ſuch productions. It matters not whether nature is directly uniform in

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the time, or in the mode of producing theſe ſoils. We have at preſent only calmly to contemplate the quantity of ſimilar earth that is met with in the world. It will hereafter be demonſtrated, that nature, found progreſſive in the production of an earth in one diſtrict, has been equally progreſſive in the production of every ſpecies of earth, ſtone, and ſubſtance exiſting. Impreſſed with ſuch ideas, how ſtrikingly muſt we ſee the true importance of ſuch natural facts, their ſingular reference to philoſophy and antiquity,—and to the juſt knowledge of the ſyſtem of the univerſe!

SEC-

SECTION

The Seventh.

HERE an extenſive ſcene opens to our contemplation. On taking a ſurvey of the ſurface of the world, we find it divided into land and water. The ſeas, lakes, and rivers, teeming with animated productions; the continents and iſlands ſtocked with the variety of birds and animals, covered with beautiful verdure, and affording ſcenes of no leſs extended animation.

mation. Thoſe ſuns too *, with their attending worlds, and the other ſuperb objects, that ſhine in infinite ſpace with tranſcendent luſtre, would not only appear to be peopled with ſublime and magnificent exiſtences, adapted to their peculiar ſituations; but each minute particle of matter ſeems endued with animation. Even in this comparatively inſignificant planet we inhabit, beſides the large and beautiful beings with which we are perfectly familiar,

* It is by means of the teleſcope that we are enabled to diſtinguiſh ſpots upon the ſun's diſk, and that the moon has mountains, vallies, and volcanos. Numerous other circumſtances would ſeem to indicate that the ſun is not a globe of fire, as was conceived by enlightened nations of antiquity; and that the elements of which ſuns and planets are compoſed, may perfectly or nearly correſpond with each other. At all events there is greater ſimplicity in nature, and much leſs diſference between celeſtial objects, than what is generally imagined.

we may obſerve every green leaf ſwarming with its inhabitants. There is ſcarce a ſingle fluid, but in each drop, by the aſſiſtance of our glaſſes, we are enabled to diſtinguiſh myriads of living objects, active and exulting in their exiſtence. The fluids, indeed, of animals themſelves, are not exempt from this ſpecies of being; and the infinity of animals and vegetables, whether of the land or ſea, though happy in their exiſtence for a time, haſten to their certain diſſolution; *yet not to an annihilation of exiſtence!* From that diſſolution, other beings and ſubſtances innumerable, take their ſlow but certain origin; and ſuch new exiſtences are as important in themſelves, or as neceſſary in exiſtence, as the animals and vegetables from whence they originated.

Independent of the changes of animals and vegetables into thoſe immenſe maſſes of ſubſtance, with whoſe abſolute and eſſential qualities we are totally unacquainted, that, through an aſtoniſhing ſucceſſion of ages, have already taken place; it muſt afford matter of the moſt curious ſpeculation, to the contemplative mind, to obſerve thoſe very changes even now continually carrying on by the moſt regular advances. Let me, at preſent, paſs by the numerous tranſmutations the rapid productions of the ocean are gradually undergoing. The continents and iſlands of the globe, of which we are more immediately the inhabitants, furniſh examples that are ſufficiently ſtriking. The earths neareſt the ſurface we tread upon, incumbent upon ſtone, clay, ſand, chalk, and variety of matter, formed by the decay of vegetables and animals, and the decom-

decompoſition of beds of matter by the influence of the atmoſphere, being leſs expoſed to revolutions and to thoſe changes time will produce, abound with innumerable veſtiges of trees, ſhrubs, plants, &c. ſome nearly in a ſtate of diſſolution, others in a meaſure intire; and, indeed, ſuch is the diverſity of theſe ſcenes, that in ſome diſtricts, at a conſiderable depth below the ſurface of the earth, large quantities of trees are met with, lying as cloſe to each other as they do in a wood; the trunks, branches, and leaves in perfect preſervation.

But the vegetable remains, thus entombed in the bowels of the earth, and ſeemingly unaffected by the deſtructive and mouldering hand of time, are not the only curioſities that preſent themſelves. The bones and relics of animals, not as yet in a ſtate

of diſſolution, occur at a conſiderable depth below the ſurface, ſome in part decayed, others with their original ſubſtance entire.

The cities too of mankind, ſhaken by the convulſions of nature, abſorbed in the bowels of the earth, and long ago deprived of their fabricators and ancient inhabitants, have, in ſome few inſtances, preſented at a conſiderable depth, covered with different ſoils, ſcenes of luxuriant vegetation, ſolicitous, as it were, to hide themſelves from the eyes of ſuperficial obſervers.

In ſhort, diſtricts of the world overflowed by the liquid matter of volcanos, altered and deprived of their vegetation by the earthquakes and convulſions of nature, or deſerted by the waters of the ocean, ſoon put on a new appearance, become the

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ſeats of fruitful and rapid vegetation, fitted for animal exiſtence, for the production and accumulation of earths and various ſubſtances, and prepared in the ſlow, but unerring progreſs of time, for a repeated exhibition of ſcenes, which, to limited obſervation, appear aſtoniſhing and uncommon.

Thus from the mere contemplation of theſe leſs perfect expreſſions of antiquity is human conception loſt in the innumerable ſucceſſion of ages, that crowd upon the imagination! But, when my reſearches are extended a little farther, and I obſerve well-known animals and vegetables are changed totally from their natural ſubſtances, aſſuming the native, the intereſting, yet unknown properties of ſtones or rocks; ſuch ſtones containing various minerals, and all together conſtituting

the loftieſt mountains and moſt extended countries, preſented too at the greateſt diſtance from the ſurface; then do I revolt from the received opinions, relinquiſh the common ideas of mankind, and, exerciſing the powers of my reaſon, ſeek for a ſolution of difficulties in an endleſs or eternal exiſtence and fluctuation of the ſublime, the intelligent and innumerable exiſtences, which conſtitute thoſe ſuns, worlds, and objects, that ſhine in infinite ſpace, and are the bright, magnificent appendages of the univerſe.

SECTION

The Eighth.

SUCH is the extraordinary and inexhauſtible ſubject that I have here undertaken to illuſtrate. But 'ere I proceed in my reſearches, the ſubterraneous fires and eruptions of volcanoes, that have recently engaged the ſerious attention of mankind, and that form ſo intereſting a branch of natural knowledge, ſolicit a previous conſideration. The effects they produce upon the ſurface, and in the interior parts of the world, are indeed of an uncommon and curious nature; and in the

ſucceeding parts of this enquiry, will be brought in ſupport of more important obſervations. Let me then, for the preſent, relinquiſh circumſtances ſtill more ſtrongly expreſſive of an infinite ſucceſſion of events, or a boundleſs antiquity, and attempt a general ſketch of thoſe forcible operations of nature.

The changes or events produced by *fire* are eſſential to the ſyſtem of the univerſe, and not confined to the ſpot that we inhabit, but common to thoſe diſtant worlds and exiſtences, that are the bright and ſublime objects of our admiration and attention. The moon, for inſtance, which ſhines but by the ſun's reflected light, and which is retained in its orbit by the earth's ſuperior attraction, is the neareſt planet offered to our inſpection; and the beſt adapted for examination. Hills and vallies

lies are there conſpicuous, and variety of appearances ſufficiently indicate, that ſhe is a body ſimilar to the globe upon which ſhe attends. And though the moſt improved inſtruments are not as yet arrived to that high degree of perfection, as to enable us to diſtinguiſh her inhabitants; yet the iſſuing flames of exiſting volcanos preſent themſelves to the ſpeculative and admiring ſpeculators; indeed, on a part of her diſk, which, at the time of obſervation, was not influenced by the ſun's ſplendour, the flames have been ſo obviouſly diſtinguiſhable, as even to illumine the hills in their vicinity. Theſe are, however, diſtant views of nature; ſatisfactory but to philoſophic and cultivated underſtandings; let me therefore once more revert to objects more familiar to the ſenſes, and to the planet upon which we exiſt.

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It has at length become a fact well known to naturaliſts, that calcined rocks, pumice ſtone, and lava, the undoubted veſtiges of ſubterraneous fires and volcanos, have almoſt every where preſented. In ſhort, innumerable are the ſpecimens proving the remote exiſtence of extinguiſhed volcanic eruptions in France, Germany, England, North and South America, the Eaſt and Weſt Indies, the late diſcovered iſlands of the Pacific Ocean, and in every extended diſtrict of the world.

If it is not criminal in theſe days, when mens ideas as to antiquity and exiſtence ſeem generally clouded and contracted, to ſpeak in the language of reaſon and philoſophy, volcanos in any particular diſtrict are beings of the moment: fleeting children of nature, they have their riſe, their progreſs, their extinction. But their influence

fluence is important, and their remains are almoſt every where viſible. In the inexplicable lapſe and in the progreſs of time, to the ignorant and to the wondering world, their iſſuing flames ever have been, and ever will continue to be matter of ſurprize.

It may not here be improper to mention ſome few facts, in order to give a clear and circumſtantial explication of the influence of volcanos.

In the dreadful eruption of Ætna, in the year ſixteen hundred and ſixty-nine, by frequent exploſions of ſtones and aſhes, a mountain was raiſed not leſs than half a mile perpendicular in height, and at leaſt three miles in circumference at its baſis. The lava, which ran from the volcano, and on which there are as yet no ſigns of vege-

vegetation, reached Catania, deſtroyed part of its walls, buried an amphitheatre, an aqueduct, and many other monuments of its ancient grandeur, which till then had reſiſted the hand of time; and ran a conſiderable length into the ſea, ſo as to have once formed a beautiful and ſafe harbour, but it was ſoon after filled up by a freſh torrent of the ſame inflamed matter; a circumſtance the Catanians lament to this day, as they are without a port *.

Such is however but an imperfect deſcription of the extraordinary quantity of matter that is frequently diſcharged by the exiſting volcanos; and, as mountains are ſometimes elevated on the land by their reiterated diſcharges, numerous are the inſtances on record of ſubterraneous fires

* Sir William Hamilton.

burſt-

burſting ſuddenly from the bottom of the ſea, and forming iſlands of no inconſiderable dimenſion.

Here it may not be improper to obſerve, that, on theſe occaſions, it frequently happens, that large fractured pieces of rock are thrown to a diſtance truly aſtoniſhing, a circumſtance neceſſary to be attended to, as prodigious maſſes of different ſpecies of ſtone are often met with detached a conſiderable diſtance from the original beds to which they evidently appear to have formerly belonged; appearances which ſeem no otherwiſe explicable than by ſuppoſing ſuch rocks to have been broken off, and diſcharged by volcanos long ago extinguiſhed.

The cities too of the world, 'the cloud capt towers, the gorgeous palaces, the ſolemn

lemn temples, and the moſt aſpiring monuments of human induſtry and ambition, ſhall not only diſſolve, and like the baſeleſs fabric of a viſion leave not a wreck behind;' but, being little more permanent than their fabricators and inhabitants, ſhall, indeed, ſcarcely ſurvive their diſſolution. Though affected by the depredations of time, deſtroyed in the contentions of nations, overwhelmed by the inundations of the ocean, and ſwallowed up in the earthquakes and convulſions of nature, in the eternal exiſtence and fluctuation of things, they ſeem not leſs expoſed to deſtruction by the fiery torrents of volcanos.

In the year ſeventy-nine, for inſtance, the eruptions of Veſuvius overwhelmed the two celebrated cities of Herculaneum and Pompeii, by a ſhower of ſtones, cinders,

aſhes, ſand, &c. and totally covered them many feet deep, as the people were ſitting at the theatre.

Such are ſome of the more ſingular and extended influences of volcanos! Yet however intereſting ſuch ſpeculations are, or whatever lights they may throw upon the ſubject of antiquity, the eternity of the world, our planetary ſyſtem, and the other ſuns and objects of exiſtence, or the nature and fluctuation of things, they are naturally abſorbed by the ſtronger expreſſions every where obvious.

SECTION

The Ninth.

IT may not be here amiſs to offer a few reflections, that ſeem naturally ſuggeſted from the whole of the preceding obſervations; their truth will, however, be ſtill more obviouſly confirmed in the ſequel of this enquiry.

The Chineſe, the Indians, the Chaldeans, the other Aſiatics, the Egyptians, the celebrated Greeks and Romans, and the animals and vegetables, that were in being at the ſame period with themſelves, but exiſted upon the ſurface of countries, whoſe very deepeſt receſſes

receſſes every where exhibit the moſt obvious ſcenes of paſt and univerſal animation, of ſlow, progreſſive, and uniform formation; and which, in common with the reſt of the globe, have equally participated of the moſt ſtriking and intereſting revolutions; revolutions indeed ſo emphatically expreſſed, that one might have apprehended they ſhould have ſuggeſted to mankind, that as their own ſubſtance was ſubject to gradual formation and decay, ſo were the different productions of nature; and that the ſubſtances conſtituting the mountains, iſlands, continents, and the world itſelf, in the eternal exiſtence of things, were formed, deſtroyed, and regenerated. But what muſt be our aſtoniſhment, when we reflect, that revolutions ſo ſenſibly important, ſo univerſally diffuſed, and ſo incontrovertibly authentic, ſeem in a great meaſure to have

evaded the ſcrutiny and the curioſity of mankind.

In a word, until theſe later ages, when the invention of printing, the improvements in navigation, an attention to natural hiſtory and philoſophy, the diſcovery of diſtant countries, and a more perfect knowledge of nature in her various departments, had directed the attention and curioſity of mankind to the formation of the globe, and the revolutions it is ſubject to; the ſeas, lakes, and rivers, the earths, ſtones, and minerals, the iſlands and continents, were looked upon as in the ſtate in which they had ever been; even the moſt enlightened nations, were under the deception. The force of abſtract reaſoning, and the powers of human intellect, left to their free exerciſe, were, indeed, ſufficient of themſelves, without the aſ-

ſiſtance

ſiſtance of curious and intereſting facts, to convince the wiſeſt of the philoſophers of Greece and Rome, that the univerſe could never have had a beginning, nor would have any termination; or, that all things were neceſſarily eternal and ſelf-exiſtent. Had then the learned and accompliſhed of the Greeks and Romans, but known the world and the univerſe as we know them, how much more ſtrongly would they have been confirmed in the truth of theſe important concluſions, and in the excellence of their philoſophy! With extaſy they would have contemplated nature, through the medium of the modern diſcoveries! Diſcoveries which alike ſupport the dignity of the human ſpecies, and the ſplendour of the univerſe! Even the leſs diſtinguiſhed, or the unenlightened ages of thoſe celebrated republics, not influenced too banefully, by ſuperſtition, gloomy

and deſponding prejudices, with rapture would have relinquiſhed the perſonifications of their faculties and affections, their gay and ſprightly mythology and ſuperſtitions, to have embraced more pleaſing and ſolid notions of exiſtence. Would they with indignation have rejected truths founded not on ſpeculation, but on the ſublime and magnificent exiſtences every where preſented to our contemplation and inſpection; or cenſured the individual who from the pureſt motives, among other objects equally intereſting, generouſly pointed out to them?

That the inhabitants of Greece and Rome, who, each in their turn, by means of ſuperior civilization, ſubdued, the one all the powers of Aſia, the other the then known world, aggrandized themſelves and triumphed

triumphed, but by excellencies in which others had before triumphed!

That the human ſpecies were eternal, though the monuments of literature, the habitations of mankind, the empires and the civilization of the world, had, alternately, their riſe, their progreſs, their declenſion!

That the moſt diſtinguiſhed and extended countries, ſo far from being in the ſtate in which they had ever been, were evidently formed out of the wreck of paſt exiſtences.

That the globe has been univerſally ſhattered, but not diſordered by earthquakes and convulſions ſucceſſively taking place.

That the veſtiges of ſubterraneous fire and extinguiſhed volcanos, furniſhing ideas of an amazing ſucceſſion of events, are almoſt every where viſible.

That the ſea was perpetually changing its ſituation, irregularly overwhelming and deſerting the iſlands and continents, and leaving the immenſe diſtricts it formerly occupied, prepared for the exiſtence of land animals and productions, and for ſcenes of luxuriant vegetation.

That the ſubſtances of which mountains, and the world itſelf was compoſed, as they were gradually formed, ſo were they ſubject to ſlow and regular diſſolution.

That the matter even conſtituting the globe, was not only changed, but imperceptibly ſo far altered in its nature and qualities,

as

as to circulate through the atmoſphere, and from thence to diſtant parts of the univerſe, from whence it alſo receives new and conſtant ſupplies.

That all things being ſubject to the moſt intereſting revolutions, were in perpetual motion, *connected* and *eternal.*

That the world was by no means independent of the ſtars, and the ſtupendous objects of exiſtence; but was more materially influenced by the ſun and moon.

That the ſun and its ſurrounding planets, bright and magnificent as they moſt certainly are, were nevertheleſs ſmall though neceſſary portions of exiſtence.

That other ſuns, worlds, and intelligent exiſtences innumerable, were the brilliant

and the inſeparable appendages of an *infinite* and *eternal* univerſe.

An univerſe, indeed, which though it inevitably excites our utmoſt wonder and admiration, altogether ſurpaſſes every idea that we can form of its tranſcendent ſublimity, ſplendour, and magnificence.

SECTION

The Tenth.

THE ſuns, the habitable worlds, the bright and ſublime objects of exiſtence, though in the ſucceeding parts of this enquiry, they will neceſſarily attract our ſpeculation; and excite, by their ſuperior magnificence, the utmoſt wonder and admiration; yet the innumerable objects ſubmitted to my more immediate inſpection, in the comparatively inſignificant *ſtar* * that we inhabit, demand a pre-

* The earth, minute as it is, and though it ſhines but by the reflection of the ſun's ſplendour, aſſumes this appearance to the inhabitants of diſtant worlds.

vious

vious and diſtinguiſhed attention. Already I have pointed out the exiſtence of the vaſt remains of the animals and vegetables of the land and ſea, in the deep receſſes of the world; and the remoteſt regions, hitherto explored, bring uncontradicted teſtimony of the truth of what I have advanced. I would not, however, wiſh it to be underſtood, that veſtiges of animated objects, are to be always obſerved in volcanic productions, nor in thoſe immenſe diſtricts and mountains of granite, freeſtone and ſand, ſo univerſally to be met with. Theſe laſt, which abound more than the other ſubſtances, are, generally ſpeaking, to be conſidered as formed from variety of matter, and moſt commonly originating from the ſands of the ſea or of rivers. It is unneceſſary to ſupport ſuch obſervations by having recourſe to particular diſtricts, and portions of the world;

world; the taſte for natural hiſtory, which ſo generally predominates, and which does honour to the preſent race of mankind, has ſuperceded that neceſſity. In ſhort, what are in themſelves a few natural facts, purely local, or minute circumſtances attending particular diſtricts, when we are poſſeſſed of a philoſophy, that ſtrikingly convinces us, of the univerſality of their exiſtence; and that brings every ſpecies of ſubſtance, every ſurrounding object, and every diſtrict of the world, in equal confirmation of its authenticity? But it is not the ſpeculative and enlightened part of mankind, that will diſpute the abundant exiſtence of the remains of animals and vegetables of the land and ſea, in immenſe maſſes of ſtone and other matter, conſtituting mountains and extended countries of the world. It is the contracted and illiberal,

liberal, or thoſe unaccuſtomed to ſuch reſearches, that receive with diſapprobation and diſtruſt, circumſtances tending to ſubvert their ill founded opinions, and not formed to flatter the groſſneſs of their prejudices. To that part of the human ſpecies, no truths can be made ſufficiently obvious. To them no obſervations that are important can be too repeatedly enforced.

Let me then have recourſe to the interior parts of England, and to the mountains of Derbyſhire, for a ſpecimen of facts, by way of illuſtrating what has already been advanced, and as an additional corroboration of the truth of my aſſertions. The opportunities of tracing in this latter diſtrict, with accuracy, the internal ſtructure of the earth, are ſuch as

are

are not eaſily to be met with *. From the monuments here and indeed every where exiſting, what ſtriking proofs are exhibited of that ſucceſſion of time; which, while it overturns the trifling and ill-directed purſuits of moſt of our modern antiquarians, derives a forcible impreſſion from every ſurrounding object!

The firſt bed that preſents, in the diſtrict of Darley Moor †, is that of a coárſe, ſandy kind of ſtone, which extends to the depth of one hundred and twenty yards; and which, from the attrition of its par-

* This advantage proceeds from its inequalities, and the mineral ſubſtances, which are induſtriouſly ſought for.

† It may be neceſſary here to obſerve, that the following arrangements of beds of various matter, is not peculiar to Derbyſhire, but prevails, with little variation, throughout the centrical parts of England.

ticles

ticles rounded as ſtones upon the ſea beach, and like moſt other ſandy compoſitions, produced from various ſubſtances, would ſeem to have been formed by the action either of rivers or of the ocean. This is ſucceeded by a black, clayiſh compoſition, indurated, and in a meaſure, petrified by time, equally deep as the former. Then comes a body of lime-ſtone, the depth of fifty yards; and, what is ſingular, the remains of a petrified crocodile, an amphibious animal, have been here diſcovered *. Next ſucceeds a matter of black ſtone or marble, reſembling lava, the depth of ſixteen yards. Another bed of lime-ſtone, the depth of fifty yards, is again incumbent upon black ſtone or lava, the depth of forty-ſix yards. This is again ſucceeded by lime-ſtone, the depth of ſixty yards.

* By a Mr. Watſon, of Bakewell.

Once

Once more ſucceeds the ſame black ſtone, the depth of twenty-two yards; and this is followed by lime-ſtone, which has not as yet been penetrated. And that the lime-ſtone, in all theſe beds, has been gradually formed by the hand of Nature, through an aſtoniſhing ſucceſſion of ages, the numerous impreſſions of ſea-fiſhes, the crocodile, and a variety of other circumſtances, ſufficiently convince us.

Such is, however, but an imperfect deſcription of the natural facts in queſtion: I ſhall therefore proceed to other appearances that demand an equal attention.—The ſeparate beds already deſcribed prevail with little variation throughout ſeveral of the adjoining counties *; and appear, in

* The matter reſembling lava does not extend far, it is an accidental occurrence peculiar to this part of the country.

many

many diſtricts, to have been fractured in the moſt curious and ſingular manner; nay, in ſome places, huge maſſes of them ſeem to have been entirely ſwallowed up. It even appears next to a demonſtration, that other immenſe beds had formerly been incumbent on the ſandy ſtone, the firſt of thoſe beds ſo particularly mentioned in the facts of Darley Moor *; and it is highly probable, that they have diſappeared in ſome of thoſe dreadful earthquakes and convulſions, with which this and every other country in the world ſeem to have been agitated. Indeed, when the miners have occaſion to dig in the adjacent vallies, they often find them filled with fragments of thoſe ſuperior beds, which appear to have been wanting. But, what is more deciſively convincing, wherever

* See page 93.

this

this ſandy ſtone, already taken notice of, is obſerved to incline below the ſurface, it is actually covered with ſome hundred yards of clay, coal, and ſtone; which laſt is of a browniſh colour, and, when applied to repair the roads, ſoon returns to the primitive clay of which it evidently appears to have been conſtituted *. And all theſe ſeparate beds, except the coal, (which, by the bye, invariably is generated in ſimilar ſituations) contain figured ſtones, repreſenting a great variety of vegetables, or, more properly ſpeaking, the impreſſions of them; as reeds of various kinds, jointed at different diſtances, ferns, corns, graſs, and many other ſpecies of the vegetable kingdom †.

* This obſervation holds univerſally true in Derbyſhire, Shropſhire, and Staffordſhire.

† Prodigious variety of ſuch curious productions are in different muſeums throughout the whole of Europe, and the civilized part of the world.

Then what ſcenes of vegetation! what happy and long continued ſettlements muſt ſuch diſtricts have afforded, for the exiſtence of men and the variety of animals! The compoſition of theſe, indeed, being ſubject to a haſty change and diſſolution, their veſtiges, though often met with, are yet leſs frequently ſo, than the other branches of animated exiſtence *.

* For a more particular deſcription of the beds of matter, of which Derbyſhire, and the centrical parts of England are conſtituted, ſee Whitehurſt's Sections and Enquiry.

SECTION

The Eleventh.

THE knowledge of ſuch facts, which are by no means peculiar to any particular diſtrict or portion of the world, but which are univerſally exiſting, may perhaps induce us to change, as well our general notions of antiquity as of the univerſe. For though the ſun, the bright and magnificent luminary, which blazes to our contemplation and inſpection, together with its attending planets, and the ſtars every where brilliant and diſtinguiſhable, are *eternal* and *ſelf-exiſtent*; yet the inha-

bitants, and innumerable objects of which they are conſtituted, have nevertheleſs fluctuated in endleſs change and revolution! No longer, therefore, are we to regard the loftieſt mountains, the moſt extended countries, the continents and iſlands of the globe, nor the ſubſtances even conſtituting the world and univerſe itſelf, as of permanent exiſtence. Formed, as well as ourſelves, by gradual proceſſes, they are likewiſe unſtable and ſubject to perpetual changes.

Nor do ſuch revolutions, ſimply teſtify a boundleſs lapſe of time. Other important and inſtructing leſſons they hold up to the contemplation of mankind. Subſtances that we meet with the fartheſt from the ſurface of the earth, carry with them the viſible impreſſions of animated exiſtence.

That the world ſhould have thus been agitated in unobſerved confuſion, is the moſt unnatural of ſuppoſitions. On every ſuch occaſion the human ſpecies evidently muſt have been preſent. Yet mankind have exiſted in a high degree more numerous and civilized at one period, than at another. In fertile ages, for inſtance, during times of the greateſt population, the whole ſurface of the globe would appear to be in ſome meaſure covered with men, domeſtic animals, and uſeful plants. But when ignorance, depopulation, and calamity, ſucceed the civilized exertions of mankind,—the enlightened and the happy periods of their exiſtence,—ferocious animals and noxious inſects, reſume in their turn dominion over the earth. Theſe changes, indeed, ſo ſenſible and intereſting to man are, nevertheleſs, perfectly indifferent to nature.

The ſame obſervation will alſo be found to hold in reſpect to animals and vegetables in general. A thouſand incidental circumſtances may have a tendency partially to deſtroy, or to give for a time, a ſuperior degree of proſperity to particular ſpecies. But all theſe variations ſeem never to amount to the abſolute extinction of any. Indeed were the laws of nature in regard to the number, and ſupport of the different ſpecies of animals and vegetables, fixed and permanent, ſhe would uniformly exhibit the ſame appearance in all climates, and in all ages; her complexion is however infinitely diverſified. No ſpecies, for inſtance, exiſts without a number of varieties; nor an individual that has a perfect reſemblance to another. Yet though all the acceſſary ſhades and touches are thus eſſentially different; the impreſſion of each ſpecies is a figure, the permanent fea-

tures of which are engraven in characters ſo ſtrongly marked, that time can never efface them.

To this mode of reaſoning it has however been objected, that ſpecies of animals and vegetables have formerly exiſted, which are not now in being. But has any abſolute proof been brought of this? The more the naturaliſt extends his reſearches into nature, the more he becomes ſenſible of how little we know, and how much remains to be inveſtigated. There are many animals and vegetables with which we have but a very imperfect acquaintance; and others that are utterly unknown. Even the known ſpecies of animals and vegetables themſelves, in the torrent of time, or thoſe ages of deſolation in which the power of man loſes its influence, and in the aſtoniſhing changes of temperature to which

the world that we inhabit is obviouſly ſubject, adapt themſelves gradually to their peculiar ſituations, and may either inſenſibly degenerate, or aſſume an extraordinary appearance of magnitude and influence. In proof of this, we have even inſtances, within our own limited experience, of animals of the ſame ſpecies fed with rich and ſucculent herbage, without any material change of climate, acquiring double the ſize of thoſe confined to mountains and inhoſpitable diſtricts.

Much ſtreſs has, however, been laid on the remains of a large animal, which have been diſcovered entombed in the bowels of the earth, whoſe teeth reſemble thoſe of the Hippopotamus or river-horſe, and to which it is ſaid, that nothing ſimilar exiſting has preſented. But have we yet penetrated

netrated the polar regions *, the interior parts of Africa and North America, or every diſtrict of the world. Are we acquainted with *all* the animals of the ſea? Or can we with aſſurance aſſert, that no ſuch animals as thoſe in queſtion are at preſent in being? Diminiſhed in magnitude, from natural cauſes, may not the ſpecies have aſſumed a different complexion? Do we not even perceive enormous horns found under the ground in Canada, Ruſſia, Siberia, &c. and that the Elks, to which they have evidently belonged, were formerly much larger than they are at preſent? This difference of ſize was moſt probably owing to the perfect tranquility they

* Even the polar regions, inacceſſible and unexplored as they moſt certainly are, may nevertheleſs give exiſtence to animals of enormous ſize. The neighbouring ſeas are, indeed, replete with the largeſt animated objects that preſent themſelves to our inſpection.

enjoyed

enjoyed in foreſts unpenetrated by man; together with a power of chooſing the air, ſoil, and water, moſt agreeable to themſelves. Or becauſe we have never had an opportunity of obſerving the exiſtence of ſuch animals, is it right to deny their exiſtence? The tuſks of the narwhal, ſuperior to ivory in all its qualities, were often met with in a foſſil ſtate, and puzzled the naturaliſts of paſt ages; mankind, however, eaſily obviated the difficulty; they pronounced them to have belonged to a terreſtrial animal that no longer exiſted. Since, however, the whale fiſhery has been eſtabliſhed, we have become acquainted with the large and extraordinary animal, to which theſe tuſks belong? Indeed, the ſame erroneous mode of reaſoning was made uſe of, in reſpect to ſome animals deſcribed by two celebrated Greek and Roman

man philoſophers *. The world pronounced them to be extinct, becauſe they had never been preſented to their inſpection; but recent obſervations, and a more extenſive knowledge of nature, have proved their exiſtence. The remains of the animals and vegetables of the Eaſt and Weſt Indies, and of the tropical countries, it will hereafter be clearly demonſtrated, are met with in the ſtones of the northern regions; and the appearance of the remains of what would ſeem to us extraordinary animals, occurring in the foſſils of the temperate climates, is by no means a proof that ſuch animals, when endued with life, exiſted under ſimilar circumſtances of climate and ſituation.

That vegetables and fiſhes were in being in diſtant ages, their obvious re-

* Ariſtotle and Pliny.

mains

mains in every ſpecies of ſtone, at the very bottoms of mountains, and in each country of the globe ſtrikingly demonſtrate. And of the equally remote exiſtence of animals in general, circumſtances may be brought which are unqueſtionably concluſive. The exiſtence of vegetables and fiſhes, already explained, would have been the ſtrongeſt preſumptive proof of this; but we alſo find, that in each quarter of the world the remains of the human ſpecies, and thoſe of a great variety of animals, are every where met with in a foſſil ſtate. The ſituations in which theſe ſometimes occur, beſpeak the moſt deciſive and diſtinguiſhed antiquity. The bones of animals have been found petrified, in great abundance, in the rock of Gibraltar. Appearances ſimilar to thoſe of Gibraltar have alſo been diſcovered in the rocks of Dalmatia, upon the eaſtern coaſt of the Adriatic.

Adriatic. Not many years ago, two large teeth and part of the trunk of an elephant were met with, tranſmuted into ſtone, in a lead-mine in Flintſhire, forty-two yards below the ſurface of the earth. Other ſuch petrified remains of elephants have occurred in different diſtricts of England, in various parts of Europe, and in each quarter of the globe *. In ſhort, inſtances of the bones of animals, petrified or changed into ſtone, have every where preſented themſelves. Much might be ſaid on the petrified ſtate in which theſe bones, as well as other ſubſtances, are met with. The ſlow advance of petrifaction, in many inſtances, and the ſurpriſing progreſs that various ſubſtances have nevertheleſs made towards it, afford perhaps the moſt ample field for ſpeculation. The vaſt rocks, the mountains of

* See ſpecimens of ſuch in the Britiſh Muſeum.

ſtone,

ſtone, the immenſe diſtricts of ſuch ſubſtances, every ſpecies and every particle of ſtone or petrified matter exiſting, demonſtrably appear to have been gradually and progreſſively generated. That ſtone has not originally been in that petrified or hardened ſtate in which it is at preſent met with, various circumſtances ſufficiently convince us. In the very middle, for inſtance, of the largeſt bodies of marble and lime-ſtone, and thoſe too at the greateſt diſtance from the ſurface of the earth, one may plainly obſerve impreſſions of the animals of the ſea. In immenſe maſſes of ſtone, of a very different quality either from marble or lime-ſtone, vegetable productions and the remains of land animals, are no leſs conſpicuous. The facts already ſuggeſted, ſufficiently ſupport my aſſertions; and, indeed, were it neceſſary, innumerable are the proofs

which

which might ſtill be adduced. Let me then once more repeat, that at the greateſt depth we ever yet have been able to deſcend below the ſurface of the earth, one may plainly diſcern the remains of the vegetables and animals of the land and ſea, enveloped in the ſubſtance of rocks.

What aſtoniſhing proſpects! What a maze of antiquity and of exiſtence does all this preſent! Conception itſelf is unequal to the contemplation. Yet what arguments, what proofs, what facts, can make an impreſſion upon men that are prejudiced and ſuperſtitious! Taught to domineer it over nature, truth and reaſon, they will not admit their light, but are callous to conviction upon every ſuch occaſion. Laſting enemies to good ſenſe, ſtrangers in ſpeculation, and too often in practice,

practice, to what is real virtue and morality; at mortal variance with every thing that is mild and amiable in life, they invariably oppose both their own happiness, and that of mankind, the real interests of society.

SEC-

SECTION

The Twelfth.

THE myriads of animated beings, happy and exulting in their exiſtence, and perfect in all their parts, diſtinguiſhable by the aſſiſtance of our glaſſes, in each drop of a variety of fluids, even in the fluids of animals themſelves,—the ſtriking reſemblance between vegetables and exiſtences endued with ſenſibility and reaſon, in moſt of their eſſential properties, in their conſtruction, propagation, and nutrition,—and the appearance of animation in productions ſeemingly of a foſſil

nature, muſt naturally induce us to ſuppoſe, that not only the ſtupendous univerſe itſelf, is replete with beings of tranſcendent wiſdom, power, and perfections; but that the minuteſt particles of matter, even compoſing the ſun, ſtars, worlds, and exiſting ſubſtances, enjoy a peculiar ſpecies of life or ſenſibility. Speculations of this abſtracted complexion, in their very nature admit not of abſolute demonſtration; and however well ſupported, by reaſon and analogy, ſtill leave the mind in a ſtate of doubt and uncertainty. Whatever therefore may be the eſſential qualities of the component parts of the apparently inanimate exiſtences preſented to our contemplation and inſpection in the planet we inhabit, it may not be here improper to obſerve, that from the chemical reſemblance of the matter conſtituting the lime-ſtone and marble, with that of the teſta-

teſtaceous matter of ſhell-fiſh in general, and the numerous productions of the coral-kind; from the rapid generation of theſe laſt, from the immenſe beds and diſtricts of ſhell-fiſh that every where preſent themſelves; and from ſuch ſubſtances uniformly occurring in the contexture of theſe kinds of ſtone, it has, with ſome reaſon, been conjectured, that marble, lime-ſtone, and the calcareous matter in general, derive their origin from the animated productions of the ocean, and become thus differently modified by combinations that we are but little acquainted with, hardened and diverſified by ſubterraneous fire or circumſtances of ſituation. Specimens, indeed, of marble and lime-ſtone are frequently met with, compoſed of nothing elſe but teſtaceous matter,—the ſpoils of ſhell-fiſh, and of thoſe innumerable ſmall animals, which, by transforming the wa-

ter of the ſea into ſtony ſubſtances, produce coral, and the madrepores, the varieties of which are numberleſs, and the quantities inconceivably great. Concerning other ſpecies of ſtone and earth, it might with equal juſtice be aſſerted, that their exiſtence is neceſſarily dependent upon the being and fluctuation of animated exiſtence. Daily experience convinces us of ſubſtances generated in this manner. And the wrecks or the impreſſions of land vegetables and animals, are viſible at the centers of the largeſt rocks.

As to the change of a variety of ſubſtances into ſtone, by means of petrifying waters, and their ſingular reference to antiquity, intereſting lights might be thrown out, could we in the different inſtances but demonſtrate the exact time of the proceſs. That ſuch changes often advance exceed-

exceedingly ſlow, need not be inſiſted upon. Petrified wood, for inſtance, converted into ſtone, is viſible in moſt countries conſiderably below the ſurface of the earth; ſpecimens of it, indeed, are often ſeen influenced by the animals and operation of the ſea, in which after its firſt formation on dry land, it had been for time immemorial immerſed, and had again emerged from its influence. But what is more truly intereſting, it may not unfrequently be diſtinguiſhed, with evident marks of being cut with hatchets previous to its petrifaction. Our curioſity in ſuch caſes is naturally excited,—the exiſtence of civilization, and of the human ſpecies, at periods remote and in ages to which no hiſtory can extend, is thereby obviouſly ſupported, though we may for ever remain ignorant as to the abſolute time neceſſary to produce the extraordinary tranſmuta-

tion. At Mansfeld petrified logs have been discovered, on which may not only be perceived, the places where they have been cut previous to their petrifaction by human exertion, but the annual growth, the bark, and all the distinguishable characters of oak wood. The Imperial cabinet of Vienna, however, contains petrified wood brought from the Carpathian mountains in Hungary, upon which the marks of the hatchet are so distinctly visible, that it is even easy to be perceived, that they have been made but by a small instrument.

The present Emperor of Germany, in order to satisfy his laudable curiosity as to these interesting facts, having first obtained permission of the Grand Signior, caused some piles of wood to be drawn up, on which the bridge which Trajan had thrown

over

over the Danube, a few miles distant from Belgrade, had been founded. They examined attentively these wooden piles, and observed, that the petrifaction was advanced no more than three fourths of an inch in fifteen hundred and some odd years. From this circumstance they concluded, that a piece of wood of equal thickness, would be petrified an inch in twenty ages; and would employ to arrive at its total transmutation ninety-six thousand years. As entire trees have been taken up completely petrified, whose trunks were more than forty feet high, and their thickness in proportion, people may judge, say they, of the time that they have been thrown down or buried.

This reasoning is, however, far from being conclusive. In certain circumstances and situations, petrifaction must necessa-

rily advance in a manner totally different, much ſlower or with much greater rapidity than it does in the waters of the Danube; yet the fact is remarkable, and a thouſand parallel inſtances may be produced. It is indeed a matter worthy of obſervation, that the quantity of earthy particles in the waters, that are poſſeſſed of a petrifying power in the higheſt degree, is but inconſiderable; and that the proceſs of petrifaction, in ſuch caſes, muſt unavoidably be conducted in a gradual, ſlow, and uniform manner.

SEC-

SECTION

The Thirteenth.

YET whatever extended ſucceſſion of time and of events the gradual and progreſſive formation of earth, ſtone, and a variety of bodies muſt have unavoidably ſuggeſted, or whatever inſight they may have afforded into the nature of the exiſtence of the ſuns, worlds, and diſtant objects of the univerſe, there is another proceſs of nature not leſs intereſting; and which indeed is equally pertinent to the ſubject upon which I am treating.

The

The minerals themſelves appear to be by no means primary productions of nature. Long has it been erroneouſly conjectured by mankind, (ever ſubject to deluſion!) that the earths, the ſtones, the minerals, were originally created ſuch as they are found, and that they thus continued permanent and immutable. Surrounded by an immenſity of matter; their own ſubſtance but a trifling modification of a ſmall part of that immenſity; coming to and forſaking their preſent ſtate of being by a gradual progreſſion; one might have thought, that the human ſpecies ſhould have extended that analogy. Why have they thus aſſumed to themſelves properties ſo totally diſtinct from every ſpecies of exiſtence, and from that maſs of matter, of which, though indeed a part, they are yet ſo inſignificant a proportion?

Like

Like every other being, and like every ſpecies of ſubſtance with which we are acquainted, the minerals themſelves take their origin in the gradual ſucceſſion of time, by proceſſes of nature with which we are by no means familiar. Their ores, indeed, are ſometimes met with, ſcattered by fragments in beds of earth, horizontal or inclined; yet theſe are far from being the places of their origin. They have been conveyed into thoſe ſituations by the earthquakes and convulſions, which, it will be hereafter demonſtrated, have ever agitated the globe. The fiſſures and the caverns of rocks are the great ſtorehouſes where nature depoſits ſuch curious productions. And even thoſe very caverns and fiſſures, which thus contain the minerals, are either themſelves formed, and every where ſurrounded with immenſe maſſes of matter, replete with the impreſſions of every

every ſpecies of animated nature; or carry in their conſtruction, undeniable proofs of the moſt progreſſive, ſlow, and uniform formation.

Mineral ſubſtances are, however, not the only productions thus contained in the fiſſures and caverns of rocks; to this claſs may be alſo added flint, in detached and ſmall quantities, cryſtals, precious ſtones, and variety of other ſpecies of matter. On the flinty ſubſtance, of which much is to be met with in the world, it may be neceſſary to obſerve, that though often thus met with in the fiſſures and caverns of ſurrounding matter, it is a ſubſtance which ſeems to have different cauſes for its production.

Concerning the properties of air and water, hitherto little has been ſaid. Fluidity,

idity, indeed, or more properly ſpeaking, fluid bodies, are in general to be conſidered as ſolids in a ſtate of rarefaction by heat. Thoſe ſolids, it is evident, participate of the nature, and are as progreſſively formed as any other body whatever. That fluidity is in moſt caſes the effect of heat. needs not to be inſiſted upon. There is ſcarce any ſubſtance which cannot, by heat, be brought into a fluid ſtate. Quickſilver itſelf has been congealed by expoſure to a certain degree of cold. In ſhort, daily experience convinces us of the fluctuation and continued generation of air; and, like other ſpecies of matter, the waters themſelves undergo continual changes and revolutions. For a fluid that may be reduced to a ſolid, that circulates in unceaſing fluctuation, each drop too of which teems with myriads of animated exiſt-

exiſtences, and which enters into the compoſition of moſt bodies, cannot be conceived, without being continually altered, deſtroyed, and regenerated.

SEC-

SECTION

The Fourteenth.

WITH the more interior parts of the world, it muſt here candidly be confeſſed, we are utterly unacquainted. It may be compoſed of matter denſer than any ſubſtances that we meet with, or it may be an open ſpace. Of one truth we may be certain, that nature is as active, and exerts herſelf with as much energy in the bowels of the earth, as ſhe does in thoſe ſuns and brilliant exiſtences, that blaze in the ſpacious regions of the ſky, and that are the life and ornament of an univerſe,

univerſe, tranſcendently bright and magnificent! To a conſiderable diſtance from the ſurface, the globe, however, would appear to us to be principally conſtituted of earth, ſtone, and mineral ſubſtances; yet, as the greateſt depth that we have ever deſcended is but very inconſiderable, and as mere ſuppoſition ſtill leaves the mind in a ſtate of ſuſpenſe; and, as natural facts alone, and ſuch as are well founded and obvious to the ſenſes, can bring us to an abſolute certainty and conviction; let me, forſaking the interior parts, turn my attention to the elevations, to the mountains of the world.

Of theſe the Pyrenees, the Alps, and the Andes, merit a diſtinguiſhed conſideration. The Andes particularly, extending nearly the whole length of South America, are

elevated, in ſome places, upwards of three miles above the level of the ſea.

The ſummits, the centers, the bottoms of ſuch mountains, are merely conſtituted but of thoſe very ſubſtances, that have ſo particularly engaged our attention.

Their earths, their ſtones, their minerals, are like the earths, the ſtones, the minerals of every other diſtrict. The earths and ſtones, more particularly, have, in their contexture, either the diſtinguiſhing appearances of animal and vegetable impreſſions, or of regular formation.

Thus then are mountains principally conſtituted of earths, ſtones and minerals, while it has been moſt deciſively demonſtrated, that earths, ſtones and minerals themſelves have been gradually and previouſly

viouſly conſtituted. In a word, let us once more obſerve, that the ſubſtances too of which mountains, continents, the habitable world, and the whole of nature is compoſed; as they were progreſſively formed, ſo are they ſubject to perpetual change and variation in their compoſition. Fruitleſs is the ſearch for a modification of exiſtence permanent and immutable!

And yet, though matter ever thus is agitated,—and nature changes forms,—her forms do all exiſt. Though men are ſeen to die, or change the mode of their exiſtence, the human ſpecies flouriſh in *eternal being!*

SECTION

The Fifteenth.

NOR ought that appearance of the world, which is erroneouſly called the diſordered face of nature, to eſcape our attention. The ſtupendous rocks, the mountains as it were, cloven aſunder, the ſhores of the ocean giving way, the adjoining waters unfathomable, are but ſo many ſtriking monuments of thoſe dreadful convulſions, which have ever agitated the globe. And whoever ſeriouſly conſiders the violent effects of earthquakes, recorded in the various annals of mankind,

or thoſe which have more recently occurred, never can be ſurpriſed at the ruins and confuſion every where viſible.

In the earthquake which deſtroyed Liſbon, in ſeventeen hundred and fifty-five, the mountains of Arrabeda, Eſtretta, Julio, Marvan, and Cintra, being ſome of the largeſt in Portugal, were impetuouſly ſhaken, as it were, to the very foundations; and ſome of them opened at their ſummits, ſplit, and rent in a wonderful manner, loſing huge maſſes which were precipitated into the adjacent vallies.

A fine ſtone quay, where the merchants landed their goods, and where at the time about three thouſand people were aſſembled for ſafety, was turned bottom upwards; and it appears that the water, where the quay ſtood, is now an hundred fathom deep.

In

In Morocco, the earth opened, and ſwallowed up a diſtrict, with all its inhabitants, to the number of ten thouſand perſons, together with tame beaſts of all ſorts, as camels, horſes, horned cattle, &c.; and ſoon after the earth cloſed again in the ſame manner as before. The famous city Taſſo was wholly ſwallowed up, no remains being left. One of the Sarjon hills was rent in two; one ſide whereof fell upon a large town, where ſtood the famous ſanctuary of their prophet, known by the name of Mula Teris; and the other ſide of the ſame hill fell upon another large town; and by this means both towns and inhabitants were all buried under the ſame hill. The earthquake was even more terrible in Barbary than in Portugal; at Mequinez, that part of the city where the Jews reſided, was entirely ſwallowed up; and all the people of that ſect, being about four thou-

ſand in number, periſhed, except ſeven or eight. And, however ſingular it may appear, it is an undoubted fact, that, at the very time of this earthquake at Liſbon, the people working in the mines of Derbyſhire were greatly alarmed by agitations of that diſtrict, and with exploſions, as it were, of cannon.

In the year ſixteen hundred and ninety-two, a great part of Port Royal, in Jamaica, was ſunk by an earthquake, and covered by the water ſeveral fathoms deep; on the north ſide, above a thouſand acres of land ſunk. Some mountains along the river, betwixt Spaniſh Town and Sixteen Mile Walk, were joined together; and others ſo thrown on heaps, that people were obliged to go by Guanaboa to Sixteen Mile Walk. At Yellows a great mountain ſplit, and fell into the level, covering

ing ſeveral ſettlements. Another plantation was removed half a mile from the place where it formerly ſtood. In Clarendon precinct the earth gaped prodigiouſly; and all over the iſland there were many thouſands of openings. But in the mountains were the moſt violent ſhakes; indeed they were ſo ſtrangely torn and rent, that they ſeemed to have put on different ſhapes from what they had formerly aſſumed; eſpecially the Blue, and other mountains moſt elevated, which were the greateſt ſufferers. A large high mountain, near Port Morant, near a day's journey over, was quite ſwallowed up; and in the place where it ſtood there is now a great lake. The Blue and its neighbouring mountains uſed to afford a fine green proſpect; but at the concluſion of the convulſions, one half of them, at leaſt, ſeemed to be wholly deprived of their natural

verdure. There one might have ſeen where the tops of great mountains had fallen, ſweeping down all the trees and every thing in their way, and making a path quite from top to bottom.

The Pico in the Moluccas, accounted of equal height with that of Teneriffe, was ſunk by an earthquake, quite ſwallowed up deep into the earth, and has left a lake in its place.

In the year ſixteen hundred and forty-ſix, many of thoſe vaſt mountains the Andes diſappeared, and were totally loſt.

Such is but an imperfect deſcription of thoſe tremendous and violent operations of nature, which overthrow or abſorb the cities of mankind, and ſhake the world itſelf! Happy viſitations, could they but teach

us leſſons of humanity and beneficence, and thus ſweeten the precarious moment of exiſtence! Diſeaſes and calamities incident to human nature, eruptions of volcanos, the inundations of the ocean, and the convulſions and agitations of the globe, conſpire to our deſtruction. The elements fight againſt us—ſhould we then fight againſt each other, or contend for a ſpot that we enjoy but for a moment! For what ſtability is to be looked for in a world that trembles under our feet! In ſhort, the veſtiges of the earthquakes, and violent convulſions of nature, preſent themſelves in every region. The ſhattered, but not diſordered world, is the monument of their extended exiſtence! And the ſtrongeſt teſtimony of the eternity of the ſtars, and of the objects that compoſe the univerſe, or of an unbounded ſucceſſion of events. What adequate idea can

we

we form of that time, which has thus afforded an univerſal exiſtence to revolutions and agitations of the globe, that make their dreadful appearance ſo rarely in the limited ſpan of human exiſtence! Agitations, indeed, which, though they thus ſtrike the human race with panic and confuſion, have their important uſes and intentions. They deſtroy in order to preſerve, they ſhake but derange not the ſyſtem of nature, which acts and perſeveres in her eternal laws, revolutions and conſiſtency, alike regardleſs of us and of our opinions.

Such then are nature's operations! And once more let us ſay, that as the vegetables flouriſh and decay, and men receive the ſpark of life, with which they triumph for a time, then fade and die, the earths

are

are tranſitory, variable in their natures. They ſometimes change to ſtone; the ſtone again is decompoſed by air, or worn away by conſtant agitation; ſometimes all are ſwallowed up and diſappear, or changed by fire, and by nature's hidden operations.

SEC-

SECTION

The Sixteenth.

THUS have I taken a general ſurvey of an extenſive part of nature. Her energy in the ſtarry regions of the univerſe, and uniform progreſſion, in the formation and decay of every ſpecies of exiſting ſubſtance, are far too obvious to be any longer inſiſted upon. In a variety of inſtances, we have, however, obſerved, that the productions of the ocean have been met with in the moſt ſtupendous maſſes of rocks; and from what has already been ſuggeſted, we muſt unavoidably be per-

perſuaded, that the ocean has been ſtationary in diſtricts where it now is not, for periods altogether inconceivable, and has there depoſited, in great abundance, its various productions. But, having gradually forſaken that former ſituation, ſcenes of vegetation have then taken place, of perhaps an equal duration. And from natural appearances frequently to be met with, there is reaſon to ſuppoſe, that its advances and retreats have been repeated in a multiplied ſucceſſion.

Our attention then neceſſarily ſeems attracted to circumſtances of a truly intereſting nature. And while, in the remainder of this diſquiſition, the more ſuperficial part of the globe is alone the ſcene of our ſpeculation, never ought we to forget, That the vegetables, the animals, the, ſtones the earths, the minerals, and every exiſting

exiſting ſubſtance, equally participate of gradual formation, and real diſſolution or tranſmutation. Such reaſonings alone will ever be found eſſential to ſound philoſophy, and the true knowledge of exiſtence.

I ſhall now proceed to give my opinion concerning the ſingular influence of the ocean; leſs deſirous to demonſtrate a ſucceſſion of time and of events, than ſtill farther to confirm what has already been ſaid; and to give an idea of the uniform operations of nature, which ſeem hitherto to have been but little attended to.

Struck with the indelible marks of paſt inundations every where viſible, a multitude of writers have attempted to account for ſuch appearances. Labouring, however, to eſtabliſh complex theories, or fettered by ſome reigning ſuperſtition, ſo

far from clearing up the point, they ſeem only to have involved it in ſtill greater obſcurity. In regard to theſe important operations of nature, ſimplicity ſhould take place of elaborate ſyſtem.

Collected in the vaſt extent of the ocean, the waters, by their continual agitation, have produced the greateſt changes on the ſurface of the earth. The marine productions every where met with, and which can only be the work of the ſeas, ſufficiently convince us, that they have ſucceſſively occupied every part of the globe.

Thus then may the boundleſs ocean be viewed in the light of a river, whoſe waters are conſtantly changing their beds. Except, indeed, with this difference, that the rivers, though they gradually change their ancient channels, yet ſuch change

change is minute, and confined to a particular diſtrict and portion of time: Whereas, in the caſe of the ocean, the change is immenſe, and of the moſt important nature; as in the great lapſe of time, its waters ſucceſſively, though irregularly, occupy and deſert every part of the world. And ſuch are the perpetual changes of earth into water, and water into land, we may be confidently aſſured, that alterations ſimilar to ſuch as have been, ſtill are, and ever will be made.

What follows, then, from this undoubted ſtate of facts? The charming ſeats of vegetation, the numerous iſlands of the world, the vaſt continents themſelves, in the courſe of time, will exiſt no longer as ſuch; but immerſed in the waters of the ocean, will undergo the moſt inexpreſſible alterations.

That

That reſtleſs element, on the other hand, gradually forſaking its ancient boundaries, will leave thoſe extended diſtricts it now covers prepared for ſcenes of luxuriant vegetation,—for the repoſe, the ſplendid cities or happy ſettlements of ſucceeding generations!

Nor are there wanting cauſes, unqueſtionably adequate, to bring about this aſtoniſhing change. In ſhort, our ideas once ſufficiently cleared in reſpect to the eternity of the world and of the univerſe, the extenſive and ſublime object of our enquiry, natural appearances, that have hitherto been regarded as inexplicable, may be eaſily accounted for.

A variety of circumſtances, are continually, but gradually, conſpiring to ef-

fect the ſea's flow, but no leſs certain, change of ſtation.

Among the moſt eſſential of theſe, may be enumerated,

The great alterations perpetually made upon the ſurface of the world, by earthquakes and volcanos.

The agitation of the waters of the ocean, from that ſtriking inſtance of our intimate connection with the ſun, moon, and other parts of the univerſe, their flux and reflux, or from whatever other cauſe.

The diſcharge of different ſubſtances from the mouths of a multiplicity of rapid rivers.

The

The conſtant generation of marine productions, both vegetable and animal.

Shores waſhed away by the ſeas continually beating againſt them.

In ſhort, whatever thus obſtructs, or gives a freer paſſage to the waters of the ocean, inſenſibly occaſions the retreat or advance of that element.

Elevating the mind to remote antiquity, granting that there have been periods of time ſufficiently extenſive, taking that juſt view of the fluctuation, and eternity of exiſtence, which it is the intention of this work to eſtabliſh, it cannot be denied but that ſuch cauſes are amply ſufficient to produce the effects, however uncommon, that have hitherto, and ſhall hereafter command our attention.

They account very ſatisfactorily for the appearance of ſhells, of ſea-fiſhes, of coral, of lime-ſtone, and other marine productions, conſtituting the ſummits and bottoms of the higheſt mountains, and other vaſt portions of the terreſtrial globe.

SEC-

SECTION

The Seventeenth.

IT is neceſſary here to obſerve, that ſome eſſential alteration in the influence of the ſun upon the globe, or in the climates and temperature of countries, has of late been ſuſpected actually to take place. A few modern philoſophers have even been induced to think, that this circumſtance alone could have altered the poſition of the ſea, and have produced thoſe extraordinary effects which are every where obſervable. Yet, though we may be even diſpoſed to grant the exiſtence of ſuch a

change, it muſt be allowed to be of a ſlow and gradual progreſſion; and, certainly, though ſilent, and by no means obvious to the contemplation of mankind, it may be conceived to produce great and important effects. Yet, even then, it could only conſpire with thoſe numerous and intereſting influences already enumerated.

That ſome ſuch alteration does take place, or that there is from other cauſes a change in the temperature of the world, is too obvious to be inſiſted upon. Theſe revolutions, however, ſeem of a nature that admits not of the cleareſt demonſtration; and, till ſuch proof is actually brought, they will be touched upon with delicacy by men, who found their reaſonings upon no other baſis than that of undeniable facts.

The

The great variety of productions, similar to those now only to be met with in the East and West Indies, and other such tropical situations, that have been discovered petrified in the northern parts of the world, occurring in stone and other matter constituting the countries of such colder regions; and in situations where innumerable appearances demonstrate, that the animals and vegetables of which they are the remains, have been generated, lived, and died, in the very districts where such petrifactions are at present found, are the circumstances that give so considerable a strength to these opinions. They would seem, indeed, to convince me, that a change in the temperature and climates of countries, does actually take place, and, the same causes continuing, will take place, from some unobserved operations of nature.

Were ſuch a change once admitted, the conſequences may actually have been, that the countries which are ſituated at preſent under the ſcorching rays of the ſun, at periods remote, may have obtained another ſituation, and may be conceived to have conſtituted the coldeſt regions of the world. And that the inhoſpitable regions, on the other hand, now covered with a deep and laſting ſnow, in their turn may have equally luxuriated in all the felicity of more happy and warmer climes.

Yet whether this cauſe, granting it to exiſt, ſhould be received as equally eſſential among the many obvious ones already mentioned, is much to be diſputed. Could we even be clear in our determination, whether it operates powerfully, though ſlowly, or not at all, in changing the ſituation

ation of the waters, it would be found by no means conſequential.

For the facts which are the fulleſt proofs of the ſea's perpetual retreat from its former ſituation, and its gradual advance upon the iſlands and continents, are of the moſt ſtriking nature. They impreſs us with proſpects truly aſtoniſhing; and convince us ſufficiently, that the ſame powers at preſent exiſt, which, ſilent as the lapſe of time, have already produced ſlow, but univerſal effects.

Enormous quantities of ſhells of every kind, corals, ſea-fiſh, lime-ſtone, marble, chalk, calcareous earth, beds and even deſerts of ſand, with other numerous remains of marine productions, are met with in every quarter of the globe, in ſome meaſure

ſure conſtituting the countries of the world itſelf.

The truth of theſe aſſertions cannot be diſputed; this enquiry has already afforded repeated proofs. Yet, out of thoſe innumerable facts that might ſtill be adduced, it may not perhaps be amiſs to ſelect one, as a ſtill farther corroboration.

In Touraine, a province of France upwards of an hundred and eight miles from the ſea, throughout a diſtrict of eighty ſquare miles, eight or nine feet below the ſurface, they come to a bed of ſhell-marle, conſtituted chiefly of oyſters, and other marine productions. Theſe ſhells are found to extend, in many places, to an unknown depth, but, upon the whole, at leaſt to the depth of eighteen feet; and will be found to amount, upon the moſt limit-

ed computation, to an hundred and forty millions of cubic fathoms of ſhells, moſtly decayed and broken into fragments *.

That ſuch curious and familiar objects are, univerſally, the genuine offspring of the ſea, will be readily acknowledged. The ſhells and fiſhes, in ſome portions of that diſtrict, are ſtill found to retain their marine matter, though much decayed. But of the prodigious quantity of ſhells tranſmuted into ſtone, ſome are found whole, others broken, many bored through by an animal well known to prey upon the living fiſh; and they have the ſame effects, uſed chemically, and in agriculture, as thoſe taken immediately from the ocean.

The ſhell-fiſh of the ſame kind are of all ſizes, ſome young and others old. They

* M. de Reaumur.

form

form distinct beds of oysters, cockles, &c. Their smallest articulations may be remarked, and even the pearls are observed that the living animal produced. The teeth too of many of the fishes are in such a state, as sufficiently to convince us that they have been made use of, and consequently that they belonged to animals that once were alive.

And that all this has not been occasioned, as has been vulgarly conceived, by any universal deluge or inundation, is demonstrable, both from the fishes petrified in the beds of lime-stone, which seem to be in the places where they have been generated, lived, and died, forming distinct beds of oysters, cockles, &c. and oftentimes deposited with as much regularity as beds of living shell-fish are in any part of the sea; and from the various marine productions

tions which, in a variety of inſtances, are ſeparated by immenſe beds of vegetable or other matter.

Such are undiſputed monuments of a ſingular ſucceſſion of events! ſuch the proofs that the ſea is by no means ſtationary! They would ſeem to prove too, and beyond all manner of controverſy, that this element, at repeated, though at different periods, has exerciſed every where its dominion!

Nature teſtifies this by a variety of different inſtances. Circumſtances render it evident, that many of the iſlands of the world have one time or other, been the higheſt land of adjoining continents; and it is not improbable, that thoſe continents, themſelves, as it has already been ſuggeſted, alternately have been buried and have

emerged

emerged from the ocean. From this reaſoning then it follows, that the various iſlands of the globe, as they have many of them been joined to ſome other country, ſo will they at future periods exiſt no longer as iſlands. Either the ſea departing will leave them portions of adjoining continents; or by its certain, though ſlow advances, immerſe them in its reſtleſs waters.

Some curious circumſtances relative to the late diſcovered iſlands of the Pacific Ocean, it may not be amiſs here to mention; though not with any kind of view to confirm the preceding reaſonings, as they ſtand in no ſort of need of confirmation from things that are ambiguous. For whether they have conſtituted of old one great aggregate, and are the higheſt land of a continent no longer in being, or have

have been more recently formed by the influence of ſubterraneous fires and volcanos, is perhaps not altogether eſſential for me to determine. But it will ever be conſidered as the moſt extraordinary circumſtance in the hiſtory of the human ſpecies, that their innumerable inhabitants, though ſeparated from each other near half the circumference of the globe, and in ſome inſtances without the poſſibility of communication, have, nevertheleſs, been found to ſpeak dialects of the ſame language.

Yet not that ſtriking reſemblance here alluded to, but the ſimilarity of particular words in uſe among nations totally detached from each other, and ſpeaking different languages, has been made uſe of as a proof, that all languages muſt have originally proceeded from one mother tongue; and

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that the human ſpecies conſequently ſprung from one common ſtock: whereas ſuch affinity is the ſtrongeſt argument in favour of the Eternity of the World. What can more clearly ſhew, that mankind, however ſeparated at preſent from each other by natural cauſes, and though differing eſſentially in language and cuſtoms, muſt in the fluctuation of things, and in the infinite ſucceſſion of events, have had intercourſe with one another; notwithſtanding time, convulſions and revolutions, or circumſtances of ſituation, may have obliterated the veſtiges of ſuch intercourſe.

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SECTION

The Eighteenth.

HERE let me obſerve, that in theſe tranſitions, the ſeas in ſome inſtances are ſeen to forſake their ancient ſtations with rapidity; in others, and indeed much more commonly, by the moſt gradual retreat; and where the waters of the deep have been well known to rage, they now leave diſtricts prepared for the beautiful and the enamelled ſcenes of vegetation.

On other occaſions the ocean is obſerved to obtain the ſuperiority, either by a ſlow

and certain approach, or by burſting in at once, and overwhelming every thing in an undiſtinguiſhed ruin.

The various deſertions here ſuggeſted are ſenſibly diſcerned by thoſe who border upon the ſea-coaſt.—Throughout the whole of Europe, towns celebrated as the moſt diſtinguiſhed ſea-ports, at preſent are met with at a conſiderable diſtance from the ocean. Aigues-Mortes and Frejus in France,—Ravenna in Italy, come under this deſcription. Yet to ſpecify particular inſtances of theſe deſerted places, is altogether unneceſſary. In ſhort, the hiſtories and traditions of every country abound with ſuch remarkable appearances.

On the other hand, within the memory of men, whoſe ſituations afford them an opportunity of making ſuch obſervations, the

the gradual encroachment of this element is equally obſervable; and though thoſe advances are often of the ſloweſt nature, yet, in the courſe of time, it may eaſily be conceived, that effects of the firſt importance muſt, from the continuance of ſuch encroachments, inevitably take place.

The Baltic, for inſtance, has deſtroyed and overwhelmed, among many others, the famous port of Vineta, and covered by ſlow degrees a large portion of Pomerania.

In the ſame manner the ſea waſhing the coaſt of Norway, is well known to have detached ſeveral little iſlands from the main land, and is ſtill making daily depredations upon the continent.

The German ocean encroaching by degrees upon the ſhores of Holland, near Catt, overwhelmed the ruins of an ancient citadel of the Romans, which had formerly been built upon that coaſt, and which is now actually under the water.

Such are ſome of the innumerable inſtances of the ſea's gradual encroachment! It now remains to give a few examples of its more ſudden advances. In the reign of Henry the Firſt, that element overflowed, with a ſudden and alarming inundation, the extenſive eſtates of the Earl of Godwin, and has formed that bank, diſtinguiſhed, even to this day, by the name of the Godwin Sands.

Two hundred and fifty years are paſt ſince a ſimilar eruption drowned, in the territory of Dort, an hundred thouſand per-

perſons, and a ſtill greater number in the neighbourhood of Dullart.

A melancholy inundation, it is univerſally known, buried in modern times, with aſtoniſhing rapidity, the half of Friezland. Not more than ſixty years ago, the church ſteeples of eighteen villages near Mardike, teſtified the unhappy event. They then appeared above the ſurface of the ſea, but have ſince yielded to the force of the waves.

It may not be amiſs in this enumeration of facts, thus teſtifying the ſea's important and rapid encroachments, to make ſome mention of that account, which has been delivered by Plato of the Atlantic iſland. In his detail of the particulars relating to the country in queſtion, he lets us know, that they were handed down to him by the celebrated Solon. That diſ-

tinguiſhed ſage of antiquity had travelled into Egypt, and received his intelligence of the matter from an obſcure tradition of the Egyptian prieſts. The world have long regarded the whole of this ſingular narrative as an ingenious fable; but the circumſtances ſo recently enumerated give the greateſt reaſon to preſume, that ſomething of a ſimilar nature actually may have taken place.

A conſiderable time is paſt, ſays Plato *, ſince the iſland Atlantis was in being. It was of great extent, and ſituated near the pillars of Hercules, in the Atlantic Ocean. The imagination of the poetical philoſopher exults in the deſcription of thoſe numerous advantages, which the inhabitants ſo long enjoyed in that charming region.

* See his Timæus.

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This felicity, together with their diſtinguiſhed refinement, terminated, however, by a dreadful and unexpected inundation. For the ſea ſuddenly forſaking its ancient ſtation, at once overwhelmed the country, and drowned all its inhabitants. At preſent, not even the ſmalleſt veſtige of ſuch a land is any where to be met with.

The inundations that have been eſteemed univerſal, and recorded in the traditions or various annals of mankind, would ſeem here to ſolicit ſome attention. Partial encroachments of the ſea, which have ever exiſted, muſt alone have given riſe to theſe vague and inconſiſtent narrations. In an uncultivated age, when men were ignorant of the eſtabliſhed laws of nature, every little incident was exaggerated, and might have been ſufficient to have given birth to the moſt abſurd and

incredible conjectures. The inſufficiency of water to cover the whole earth, the unnatural ſuppoſition of a great and intereſting part of nature being at once deſtroyed, the inconſiſtent manner in which all ſuch ſtories are ever related, impreſs us with inſurmountable incredulity. In ſhort, they never can be received, never can be thought reconcileable to reaſon, by the ſenſible and enlightened part of the human ſpecies.

In the place then of commenting upon fabulous ſtories, the effuſions of ignorance and error, may it not be full as well to give ſome general hints which may for ever caution mankind from being eaſily captivated with ſimilar deluſions?

Let us ſeparate circumſtances that are of an improbable nature, from the narrations

tions of remote or diſtant hiſtory. Whenever we entertain ourſelves with the tranſactions of the paſt times, never ſhould we enter upon them, but with the firmeſt perſuaſion, that the incidents which glaringly contradict the eſtabliſhed laws of nature, are but the dreams and erroneous concluſions of men, involved in barbariſm and obſcurity. Is it poſſible, without an eye to this, to peruſe, with any kind of advantage, the ancient errors of mankind?

Our immediate predeceſſors were firmly and univerſally perſuaded of the real exiſtence of the mereſt phantoms of imagination. To enumerate the many inſtances of their folly, would be but a painful taſk. The intelligent, indeed, feel themſelves hurt by ſuch narrations. To conceive himſelf allied to a ſpecies capable of ſuch glaring miſconceptions, can, in fact, never be

be flattering to a man endued with ſuperior reaſon and ſenſibility. Let me, however, ſelect an hiſtorical circumſtance from the multitude of thoſe that reflect ſatire and diſgrace upon human nature. The unbounded exiſtence of *ſorcery* and *witchcraft* was never once diſputed among our almoſt immediate anceſtors: a belief of their extended influence, formed indeed an important branch of their ſuperſtition! And it is a well-known fact, that a number of the human ſpecies, in theſe days ſcarcely to be credited, fell the innocent and the unhappy victims to ſuch groundleſs and melancholy dreams and prejudices.

How miſerable are men thus ſuperſtitious and unenlightened! or under the unfortunate influence of thoſe miſtaken and dangerous tenets, that have received the ſolemn ſanction of truths the moſt

ſacred and unqueſtionable! They come into their preſent ſtate of being, to contemplate and to admire the world which they inhabit, the ſun, ſtars, the ſublime and bright proſpects of the univerſe, and to taſte the pleaſures of exiſtence; and though they enjoy but a ſhort and precarious being, yet muſt they add to the ſcourges incident to human nature, and make even the phantoms of the groſſeſt and moſt gloomy ſuperſtitions, a plea for maſſacres, deſtruction, and perſecution!

Were any, however, at this preſent period, ignorant and credulous enough to aſſert, with confidence, the real exiſtence of ſuch imaginary beings as thoſe I have been alluding to, the natives of Europe, at leaſt, ſeem to have acquired juſt diſcernment ſufficient, to ſee the fallacy of ſuch deluſion. But why do theſe very

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Europeans ſtill ſo far countenance folly, as to give an unlimited credit to ſimilar fables and abſurdities of antiquity! Is the preſent race any worſe for being but a little wiſer than their anceſtors? And can it, at this day, injure the morals of ſociety, or the intereſts of mankind, to make them ſtill a little wiſer than they are; to diveſt them of a part of their folly, and prevent them from falling again into groundleſs and falſe ſuppoſitions, tending to deſtroy or at leaſt to ſet them at variance with one another?

Theſe laſt obſervations are unqueſtionably true; yet, however true, might in this place have been entirely omitted. In ſhort, fabulous ſtories and circumſtances, glaringly contradicting the eſtabliſhed laws of nature, can only be received by thoſe who blindly receive any thing. Such as

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are incapable of diſtinguiſhing the links of probability, that cannot perceive what is wanting in the chain, eagerly embrace the wonderful in every narration. Fables will pleaſe, but the beautiful ſimplicity of nature and truth ſolicits in vain their attention!

SECTION

The Nineteenth.

IT would, however, be unpardonable in me to omit mentioning ſome circumſtances, of a widely different and of a more intereſting nature. What appear to be the undoubted remains of tropical productions, both of the animal and vegetable kind, whoſe former exiſtence evidently ſeems to have depended upon the ſun's direct influence, have been diſcovered petrified in high northern ſituations; where ſuch ſtones and petrifactions as I have before mentioned, are ſo abundant,

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as even in ſome meaſure to conſtitute immenſe diſtricts and portions of the countries, where they are at preſent found. In the contexture, for inſtance, of prodigious maſſes of ſtone, throughout the northern regions of Europe, the impreſſions of plants are obſervable. Theſe plants are chiefly of the capillary kind, but ſometimes of a peculiar ſpecies of fern; both well known to be ſimilar to the preſent natives of the tropical regions *.

Prodigious remains of elephants have been diſcovered in all the northern parts of the world, changed into ſtone. Crocodiles, the teeth of ſharks, and a great variety of ſhell and other fiſhes, alſo preſent themſelves, impreſſed upon ſtones, in

* Many ſuch ſpecimens are in the cabinets of the curious.

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the various parts of Europe, which at preſent no where exiſt but in the Eaſt and Weſt Indies, and other ſuch tropical ſituations. And all theſe appearances of vegetables, animals, and fiſhes, found remote from their native regions, are accompanied with variety of circumſtances, which ſufficiently indicate that they were generated, lived, and died in the very diſtricts where their petrifactions are at preſent diſcovered.

In ſhort, how theſe productions ever could come into thoſe northern ſituations, may well excite our aſtoniſhment. They would ſeem indeed deciſive, to eſtabliſh the reaſonings previouſly ſuggeſted, in reſpect to a change in the temperature of countries. For it is evident, thoſe climates muſt originally have been ſuited to the nature of the exiſtence of ſuch animals

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and vegetables. If then theſe circumſtances ſhould be thought inconcluſive in proving, that an alteration in the influence of the ſun upon the globe, has actually taken place; they at leaſt hold up, and that in the moſt ſtriking point of view, ſome ſtrange tranſitions through which each diſtrict unqueſtionably does paſs, in the *infinite* duration of the univerſe.

SECTION

The Twentieth.

THUS have I traced this ſublime and intereſting ſubject, from the lights of human traditions, records, and opinions; and through ſome of the wonderful various revolutions, that this world is ſubject to: and in doing this, have ever been inattentive to the dreams and ſpeculations of mankind. Nature, indeed, has been my beſt and ſureſt guide; and, though I knew ſuperſtition and ill-founded opinions, too often take a malevolent and violent direction, in ſearch of truth, I have acted as if

if no ſuch baneful doctrines and diſpoſitions exiſted. What is there in this preſent ſtate of exiſtence, that a man ſhould degrade himſelf by a baſe and diſhonourable acquieſcence in tenets, that he is convinced are ill-founded and dangerous to ſociety! And why ſhould truth be ſuppreſſed, becauſe it flatters not the groſſneſs of the conceptions, and the reigning prejudices of the multitude! Such, however, is its force and excellence, that, to the unprejudiced mind, it requires but to be known in order to be admired: Though it ſhould then meet with the approbation but of few individuals, yet the approbation of the wiſe and good, is ever to be preferred to that of the multitude. The great and illuſtrious characters that have enlightened the world, have generally fallen a ſacrifice to the madneſs and folly of mankind. Their ſenſeleſs indifference or violent malignity, indeed, will

ever be experienced and attracted by new ſyſtems and opinions; becauſe ſuch ſyſtems and opinions are ſubverſive of their moſt favoured dreams and ſpeculations. It is well known, that even the moſt ſublime and intereſting of all diſcoveries, the diſcoveries in *aſtronomy* were not at firſt adopted; and that the clamours and menaces of ſuperſtition were not only experienced by the immortal ſages that led the way to this profound knowledge; but the more active engines of its virulence and torture. Philoſophy, indeed, ultimately rent the veil that diſguiſed the monſter, and light penetrated the ſurrounding darkneſs!

The bright and infinite univerſe, vindicates ſufficiently its own ſplendour, its remote and ſelf-exiſtence! I therefore, can have no juſt claim, neither to this diſtinguiſhed merit, nor its attending perſecution,

tion, in enforcing the eternity of the magnificent objects which compose it. Actuated, however, by the purest motives, and regardless of the approbation or the censures of mankind, I have asserted *the Eternity of the Universe*. Human records and traditions have, indeed, afforded me but feeble lights; as the greatest part of mankind exist without that degree of civilization, which is necessary to give existence to history and written monuments. And those that even are possessed of such advantages, can gain but little knowledge of past transactions, from the instability of every mode of existence, and the revolutions that take place in the world. Nature seems to have set bounds to such researches; indeed, the records of the present day, in succeeding ages, or in an extended succession of time, will give as little insight into the present history of man-

kind, as what we call ancient hiſtory affords us of the tranſactions of paſt ages! Yet, even this very precarious, and fluctuating ſtate of learning, this obſcurity, and limited extent of human records and traditions, I have found to be one among the many arguments in favour of the Eternity of the World and of the Univerſe. The extenſive population of mankind, too, at every period, is another proof of their eternal exiſtence! The northern ſwarms of the human ſpecies, that over-ran the ſouthern parts of Europe, and induſtriouſly ſubverted the arts, ſciences, embelliſhments, and monuments of literature and civilization, ſhew, that an advancement in the arts and ſciences, is not ſo eſſential to extenſive population, as might at firſt be apprehended. For even the utmoſt degree of refinement, that mankind is capable of attaining, is but a ſhade of variation from

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the rude arts and manners of the leſs enlightened parts of the human ſpecies. Little acquiſitions ſeem great to little minds; but the philoſophic mind is well convinced, that human knowledge and civilization are, at beſt, but ſuperficial and imperfect; and that the greateſt and moſt difficult of all knowledge is to become ſenſible how little we know. The outlines, indeed, of human nature in every age and nation are the ſame. The ſtrong expreſſions, for inſtance, of human character, are to be met with among unpoliſhed people; and where, let me aſk, is the eſſential difference, between the moſt learned and accompliſhed individual of the politeſt and beſt informed country, and one even taken from inhoſpitable and uncultivated deſerts, to whom nature has been liberally beneficent?

If, however, hiſtories and traditions give but preſumptive proofs of remote exiſtence, it is otherwiſe with the natural objects, that the world every where preſents to our inſpection. Proceſſes of nature and revolutions of the globe, evidently carried on in the moſt ſlow and uniform manner, have nevertheleſs produced alterations and changes, which nothing but a ſucceſſion of ages, altogether inconceivable, could ever have afforded time to effect. The reſtleſs and unbounded ocean, for inſtance, forſakes its ancient ſtation in the moſt ſlow, yet certain manner, and overwhelms or deſerts a limited diſtrict; but in the courſe of ages, or myriads of revolving years, nevertheleſs has time given an univerſal exiſtence to its retreats and depredations. Volcanos too diſcharge their fiery torrents for an incredible ſpace of time, and ſpread devaſtation and terror to the adjoining provinces

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and their inhabitants. And though their preſent number is ſmall, yet where is the country in which their extinguiſhed influence is not viſible? How rarely, too, in the courſe of human exiſtence, do earthquakes and agitations of the globe ſhake and diſorder the face of nature, abſorb the cities of the world, divide or ſwallow up the mountains, and extended provinces, and ſhatter and derange the beds of various matter of which the globe is conſtituted; yet what beds of matter, what provinces or mountains, but what are deranged, ſhaken, and diſordered by their paſt exiſtence! Can an earth, ſtone, or mineral, be produced, but whoſe regular formation is demonſtrable? Nature, indeed, daily and inceſſantly exerts herſelf in ſuch productions. But how does ſhe exert herſelf? Does ſhe not proceed in the moſt ſlow and uniform manner? She produces,

duces, it is true, earths, ſtones, and minerals; but does ſhe not require an incredible ſucceſſion of ages, for the production of but a ſmall portion of ſuch ſubſtances? In a word, the veſtiges of the animals and vegetables, with which we are perfectly familiar, are every where met with, in the deepeſt receſſes, conſtituting, as it were, the countries of the world itſelf. Nor is there an exiſting object, that preſents itſelf to our contemplation, but of whoſe regular formation and decay we may be fully ſatisfied. It becomes then not ſo much a queſtion, how nature acts in her operations and revolutions? Or how ſhe produces and deſtroys her modifications and exiſtences? But whether ſhe has or has not *always* proceeded in the manner ſhe does at preſent? Whether a perpetual fluctuation of formation and diſſolution of the objects of exiſtence, is not eſſen-

eſſential to her being? And whether the eternity of the human ſpecies, of the world, the ſtars, planets, and the variouſly ſplendid ſcenes of the ſublime and magnificent univerſe, is not the only ſyſtem that can poſſibly account—for the ſlow and wonderful revolutions, to which the globe that we inhabit is thus more immediately ſubject, for the production and diſſolution of the objects which compoſe it, and for thoſe innumerable and bright ornaments of exiſtence, that blaze in infinite ſpace, and are every where preſented to our admiration and inſpection.

SECTION

The Twenty-firſt.

THE ſtars in all parts of the heavens brilliant and diſtinguiſhable,—the ſun, the bright and magnificent luminary that blazes to our admiration and inſpection, as well as the orb or ſpot upon which we exiſt, and the other attending worlds, have been the ſuperb and ſplendid objects of my ſpeculation and attention; yet, in order to take a juſt and comprehenſive view of this grand and extenſive ſubject, it is ſtill neceſſary to extend my reſearches to the bright and diſtant regions of the univerſe, and to contemplate

templated ſuns, worlds, and exiſtences, ſublime and magnificent beyond the power of language to expreſs, and the utmoſt efforts of imagination to conceive. The univerſe, as far as it can be viewed by the beſt and moſt improved inſtruments, is formed of innumerable ſtars, or ſuns, ſubſervient to the laws of matter, motion, and of nature, of which they are indeed but ſmall yet neceſſary parts; and not abſolutely *fixed*, as it has been generally ſuppoſed; for ſome are ſeen to change their ſtations, to diſappear, to wander, but are not loſt; others are alternately viſible and inviſible, with their light apparently kindled and extinguiſhed; ſome may be perceived for once, and then are ſeen no more; new ones on the other hand continually preſent themſelves, to the contemplative and admiring obſerver. Yet the abſence or the preſence of ſuns, or

of

of ſyſtems of worlds, has no other effect on our eyes, than the extinction of a ſpark of fire, or the loſs of its feeble and tranſient ſplendour. Limited to the ſpot upon which we exiſt, we view this atom as a world, and ſee the ſuns and worlds as atoms. The globe that we inhabit is a dark, or an opake body, whoſe hemiſpheres are alternately gilded by the ſun's ſplendour, and buried in the ſhades of night. With a ſilent, ſteady rotation, it, indeed, ſucceſſively preſents every part of its boſom, to that bright and magnificent luminary, the parent of vegetation and ſource of felicity; from whence it at once imbibes light, heat, and nouriſhment. It is inviſible to the inhabitants of thoſe innumerable globes, that are the appendages of remoter ſuns; and, to the moon only appearing great, is ſeen but as a *ſtar* by the few adjoining planets, that revolve round the ſame center with itſelf; ſome

of

of which have, indeed, a thouſand times its magnitude.—The comets are ſtill more numerous, than the worlds more immediately influenced by the ſun's attraction. They conſtitute a more intereſting part of the univerſe, deſcribe eccentric orbits, ſtretch far into the profundity of ſpace, but are recalled at ſtated periods; ſome even require ſeveral centuries to perform their revolutions.

The firmament is a theatre of *great* events, but the human eye is unable to perceive them. With what magnificence does nature ſhine in her productions! How auguſt and ſilent in her wonderful and unceaſing operations! What an infinity of objects! The viſible ſtars, their primary and ſecondary planets, together with the attending comets, indeed, conſtitute as trifling a portion of exiſtence, as our ſun does, when compared to the in-

numerable other ſuns, that come within the ſphere of our obſervation! For though the ſun that blazes to our contemplation, and enlivens with its genial influence our imperfect and momentary exiſtence, is ſuppoſed to be a million of times larger than the earth that we inhabit, and retains, by the ſuperior force of its attraction, its attending planets in their reſpective orbits: yet does this immenſe body, when compared with the univerſe, dwindle into an inſignificant ſtar of the milky way! which, indeed, is compoſed but of cluſters of unnumbered ſtars, apparently approaching each other, nevertheleſs removed at immeaſurable diſtances, and but in part diſtinguiſhable by the moſt improved inſtruments; and even thoſe ſtars that are thus diſtinguiſhable, conſtantly increaſe and decreaſe in number, in proportion to the apparent brightneſs of that ſhining zone

to

to the naked eye *. And if the ſun has its ſplendid comets, its ſurrounding worlds, their attending moons and inhabitants, who can number thoſe that are the magnificent appendages of the ſtars that we are enabled to diſtinguiſh? Or what adequate idea can be formed of thoſe other worlds and beings, that lie far beyond the reach of every means that we can make uſe of, to gaze at and to contemplate, the ſublime and the bright proſpects of exiſtence! If then one ſtar and world, with its myriads of inhabitants, had an origin,

* It may be neceſſary to obſerve, that the collecting of ſtars into numerous bodies, and their abſence in other parts of the firmament, have given juſt grounds to conjecture, that the ſtars thus wonderfully collected, form but the appendages of magnificent ſyſtems, which have ſtupendous exiſtences for their centers; and that the idea of ſyſtem, thus including ſyſtem, may be greatly extended.

which I by no means admit, all ſtars and worlds muſt have had the ſame origin. Are they of *yeſterday*, as ſuperſtition would teach us to conjecture! And do they laſt but for a *day!* Or are they not *ſelf-exiſtent* and *eternal?* Do they not ſurpaſs all our ideas of ſublimity and magnificence! and do they bear any ſimilitude to the works of human ſtructure and contrivance? or is this world ſelected from the infinity of others, the model of perfection! Are the inhabitants of the ſpot upon which we exiſt, or of this inſignificant planet, diſtinguiſhed for peculiar excellencies? Do their virtues, their humanity and goodneſs, beſpeak ſuch diſtinction? Neceſſary but imperfect beings and vain atoms as they are, they enjoy a ſhort and precarious exiſtence; and act a ſubordinate part on the grand theatre of an univerſe, whoſe myſteries they were never deſigned to com-

prehend. This imperfection and illuſion laſts, however, but for a time. We change the ſtate of human being, in order to embrace new exiſtences; or more intereſting modifications of that ſublime and extraordinary univerſe, which can never ceaſe to be the object of our utmoſt wonder and admiration! "Through what variety of untried being, through what new ſcenes and changes muſt we paſs! The wide, the unbounded proſpect lies before us, but ſhadows, clouds, and darkneſs reſt upon it!" Nature ſeems, indeed, to have drawn this veil, to have obſcured the proſpect, even to have annexed the ideas of horror and diſguſt to thoſe of diſſolution, and to have thus impoſed upon the ſenſes, leſt conſcious of our imperfect ſituation, and the many calamities incident to our being, we ſhould deſert the poſt at which we are ſtationed, and haſten to premature enjoy-

ment of better exiſtence! For the univerſe is infinitely various; and nature has bountifully endued every being and object with their peculiar excellencies and felicity. Even our preſent exiſtence, chequered as it is, is not without its exquiſite enjoyments! Yet what is this life but the prelude to another, and to the enjoyment of more perfect and exalted happineſs!

In a word, if it be neceſſary that ſuns and worlds ſhould exiſt, why was it not *always* neceſſary? Why ſhould there be any end to their tranſcendent brightneſs and magnificence? Take away ſuch brilliant objects of exiſtence, and we deſtroy the univerſe! The natural appearances that preſent themſelves in the planet we inhabit, moſt ſtrongly ſupport me in the concluſion, that nature has *ever* acted by laws

laws fixed and immutable; and that all things are neceſſarily *eternal* and *ſelf-exiſtent*. The abſtract arguments that I am yet to advance, will be found to be ſtill more convincing proofs of the eternity of the human ſpecies, the world, the ſuns, planets, and the univerſe.

It ſeems here proper to obſerve, that in tracing the revolutions of the globe, and the important operations of nature, I have not always been ſolicitous to point out an eternal or uninterrupted ſucceſſion of time. It was ſometimes indiſpenſibly neceſſary, to deſcribe the progreſs of events, which had but a

diſtant alluſion to the Eternity of the Univerſe; in order to give an idea of the nature of exiſtence. In ſhort, what is it to us, how the climates change and countries alter ſituations, or how the ſeas forſake their ſtations, when the eſſential truths of a ſublime and intereſting ſpecies of philoſophy, abſorb every leſs important conſideration; and moſt undoubtedly convince us, that matter no where is at reſt; that the very ſeas, the countries, the world, and univerſe itſelf, are compoſed of particles in continual fluctuation.

Theſe immutable truths ſhould never be forgot, that animals and vegetables flouriſh and decay; that earths are formed by ſlow degrees; that they too change by time; that ſtone is formed, is decompoſed, or altered in its compoſition; that mountains

tains now are elevated, now depreſſed; that ſtars participate in endleſs action; that all things are connected and *eternal*; and that nature *lives* in changes and in motion.

SECTION

The Twenty-ſecond.

FROM every appearance of the bright and magnificent univerſe, the ſublime object of my admiration and anxious attention, it muſt then evidently appear,

That the exiſting records and traditions, high as they may ſeem to ſome to originate, are but of the moſt limited extent, and give little or no inſight into the hiſtory of mankind, or the ages that have paſſed away.

That

That human ſociety has been, and is ſtill in continual revolution; that the art of writing could only take its origin in the advanced ſtate of refinement, and is then ſubject to unſpeakable fluctuation.

That the innumerable ages of barbariſm and ignorance, the unrecorded part of the human ſpecies, are for ever loſt to our ſpeculation; that empires riſe and fall; and that from variety of cauſes, barbariſm and civilization alternately ſucceed each other.

That the veſtiges and ſubverted monuments of paſt civilization, are daily dug up from the bowels of the earth, and afford the ſtrongeſt teſtimony of the numerous exiſtence of the human ſpecies, at periods remote, and in ages to which no hiſtory extends.

That

That the remains of the animated productions, both of the land and ſea, are univerſally met with, in the deepeſt receſſes, conſtituting, the countries of the world itſelf.

That not one ſingle ſubſtance in the globe that we inhabit, is either permanent or primary.

That the animals, the vegetables, the earths, the ſtones, the minerals, alike take their origin in the gradual progreſs of time, and in its unceaſing ſucceſſion are alike expoſed to innumerable tranſmutations.

That the world, from a multitude of cauſes, is ſubject to the moſt ſlow but intereſting revolutions.

That

That it undergoes incredible changes from heat and cold;—the operation of ſubterraneous fires *,—from earthquakes and volcanos.

That

* Subterraneous fires alone, through an aſtoniſhing ſeries of convulſions and revolutions, and a wonderful ſucceſſion of events, have produced the extraordinary appearance of calcination to be met with in ſome of the mountains, and interior parts of the earth; appearances which ſeem to have induced the ingenious Count de Buffon, to form the erroneous conjecture, that the world was originally detached from the luminous matter of the ſun; and that a comet gave birth to our planetary ſyſtem!

Wonderful and numerous however as the veſtiges of ſubterraneous fire moſt undoubtedly are, and great as its influence is, it is ſtill poſſible to extend its operations even beyond what natural facts ſeem abſolutely to juſtify. Dr. Hutton, the ingenious

That important alterations are perpetually made by the decay, generation, petrifaction, and other tranſmutations of vegetables and animals.

That the ſea is continually altering the face of the earth.

That, in the eternal lapſe of time, it alternately encroaches on and retreats from the iſlands and continents; leaving the diſ-

nious author of a diſſertation publiſhed in the Edinburgh Philoſophical Tranſactions, while he thus perhaps, too much extends the influence of fire, adopts the opinions I have ſo long endeavoured to eſtabliſh, in reſpect to the alternate deſtruction and renovation of foſſils, or of the ſubſtances that compoſe the world; and ſenſibly obſerves, that as worlds are thus ſlowly and alternately deſtroyed and reproduced, there can be no veſtige of a beginning, nor proſpect of an end!

tricts

tricts it formerly occupied, prepared for animal exiſtence, ſcenes of luxuriant vegetation, and the happy ſettlements of ſucceeding generations.

And that gradual, but obvious influences, occaſion thoſe numerous yet partial inundations, that have been found to make ſuch deep and laſting impreſſions, that have exiſted in every country, and every where left behind them the moſt viſible marks of ruin and devaſtation.

That the animals and vegetables of the tropical countries, are met with in great abundance, in the ſtones and foſſils of the northern regions.

That every appearance of nature moſt ſtrongly indicates, that convulſions and revolutions,

volutions, violent beyond our experience or conception, both have exiſted, and will again exiſt, yet unequal to the deſtruction of the globe or the whole of the human ſpecies.

That though evidently productive of the greateſt alterations on the ſurface of the world and its inhabitants, yet the events being far beyond the reach of hiſtory and tradition, our imperfect records and experience can furniſh us with no real proof nor teſtimony of their exiſtence.

That all theſe operations of nature, being carried on in the moſt ſlow and uniform manner, never could have produced their

their extraordinary effects, but through an aſtoniſhing ſucceſſion of time.

That independent of the ſingular proſpects of remote exiſtence, which ſuch curious revolutions moſt ſtrikingly demonſtrate, they may unqueſtionably be brought as the ſtrongeſt teſtimony in favour of the eternity of the world, of the objects which compoſe it, and of the whole of nature.

That the world, though eternal, is yet by no means independent of external objects, but is evidently influenced by the ſun, moon, and univerſe, with which its conſtituent parts interchangeably circulate, and are connected, and from whence the globe alſo receives freſh and inceſſant reſources.

That

That the ſun and its attending planets, magnificent beyond conception, as they moſt certainly are, are nevertheleſs but ſmall yet neceſſary portions of exiſtence.

That a variety of ſuns and worlds, together with ſublime and intelligent beings innumerable, are the ſuperb and the bright ornaments of an univerſe, as tranſcendent in its ſplendour and magnificence, as eternal in its exiſtence.

SECTION

The Twenty-third.

IT is needleſs to enlarge on the revolutions that the world is ſubject to, or to dwell on thoſe magnificent exiſtences, that ſhine in infinite ſpace, with tranſcendent brightneſs, and ſo powerfully ſupport the Eternity of the Univerſe. A new and extenſive field is opened for ſpeculation. The facts will ſpeak for themſelves. And every man of common obſervation, who freely exerciſes the powers of reaſon, on the general appearance of things, may eaſily ſatisfy himſelf, that the doctrine is built on the moſt ſolid foundation.

Let it ſuffice, ere I enter on a farther diſcuſſion of this uncommon and intereſting ſubject, to offer a few general obſervations, eaſily deducible from what has already been ſaid. Studious contemplation, and a train of reaſoning on thoſe innumerable exiſtences, ſo univerſally preſented to our admiration and inſpection, have naturally led me to conclude, that the human ſpecies, all animal and vegetable life, the ſurrounding worlds, the ſtarry firmament, the ſublime and extenſive ſcenes of exiſtence, are *eternal* and *ſelf-exiſtent*. We have ſeen the inſuperable barriers, that are for ever placed to the extent of human records and traditions. Enjoying too, in the planet they inhabit, a chequered and precarious being, mankind exiſt but for a moment! Is it therefore to be wondered at, if reaſoning from their own inſtability and momentary

tary exiſtence, their notions of time itſelf are become ſurpriſingly contracted? How unequal too, are the human ſpecies, generally ſpeaking, to every kind of abſtract and intricate diſcuſſion! And how familiar in life are the inſtances of glaring and obvious inconſiſtency! Ought we then to be much ſurpriſed, if in the general belief of the world, we meet with ſomething erroneous? One part of the human ſpecies are without even the poſſibility of coming at any other knowledge, than that which is obtained by oral tradition, or by their own immediate experience. Ignorant of the art of writing, or of regiſtering their ideas, whole nations are even now without any written books, hieroglyphics, or other ſtanding memorials whatever. Becauſe they are not benefited in theſe reſpects as we are, the unfeeling, the contracted, and prejudiced among us, are, in ſome degree, diſ-

poſed to degrade them from the rank of human nature. Many nations, it is true, are differently circumſtanced; they have written obſervations. But of what nature are they?—Voluminous tracts, whoſe contents are abſurdities, that are greedily devoured by an undiſcerning multitude. Splendid monuments of literature, the productions of genius, that ſhine amid this univerſal darkneſs, do however preſent themſelves. For dignified and illuſtrious characters have in every period exiſted, the ornament and the pride of human nature. But as to the ineſtimable few, thus endued with ſuperior abilities, who think or write in a rational and conſiſtent manner, and whoſe clear diſcernment and improved underſtandings raiſe them above the ordinary level of mankind, how are they too often requited? Ignorance diſcovers not the originality, the excellence, nor the truth of their

their obſervations ; or, becauſe they differ from the unenlightened part of the human ſpecies, they expoſe themſelves to the diſapprobation and the cenſures of the ſurrounding multitude.

Have then the nations thus circumſtanced, profited eſſentially by the advantages they poſſeſs ? Elaborate fabricators of what have been erroneouſly eſteemed unqueſtionable ſtandards of refinement, ſeem either to have miſtaken the intereſts, or to have intentionally impoſed upon the ſenſes of mankind. Inſtead of giving vigour to their judgments, do they not labour to render them incapable of judging, and to ſpread a gloomy influence over the whole conduct of their lives ? The dupes of any ſyſtem of ſuperſtition univerſally prevailing, what virtuous models of perfection ! what peaceable and

ſpotleſs mortals! Should ſuch qualifications, ſuch deluſions, characteriſe the ſtateſmen or the monarchs of the world; ought we to be ſurpriſed, if, blind to the real intereſts of ſociety, they prove the tyrants or the unenlightened and oppreſſive rulers of mankind?

What pains are there not taken to ſtop the inlets of all knowledge, to blind, or to confuſe mankind! Effectually deceived, do not the greateſt part of them thank their imaginary benefactor? Do they not too frequently pay the greateſt deference to men, in proportion as they propagate abſurdities? And is it ſeriouſly thought, that deceiving mankind is the real intereſt of ſociety? Granting that a ſmall portion of the human ſpecies, be actually benefited by deception; do they think that the reſt participate the advantage? Can men thus

thus artfully blindfolded, trace the windings of nature? Can we, ſhort-ſighted of ourſelves, and hoodwinked by others, make any progreſs in uſeful and philoſophical reſearches? Can we, amid ſuch confuſion of ideas, though poſſeſſed of the diſpoſition, accompliſh the purpoſe of doing juſtice, either to ourſelves or to our fellow creatures! What can have ſo fatal a tendency, to corrupt the morals and underſtandings of mankind, as tenets demanding that ſacred attention to frivolous obſervances, which is due alone to virtue,—to good and noble actions? Is it poſſible for us, under ſuch wretched circumſtances, to diſtinguiſh what is really right or wrong, to fix with preciſion the boundaries of morality? In ſhort, the more ſuperſtition each individual poſſeſſes, the leſs virtue is to be looked for! Humanity and beneficence are the reſult of the fineſt

feelings of human nature, and generally accompany the beſt underſtandings; perfections that harmonize not with hypocriſy and deception!

The inhabitants of a celebrated portion of the globe that we inhabit, ſtyle themſelves the rational, the civilized, the intelligent of mankind. Yet, with all their boaſted knowledge, are they not abſurd enough to confine the exiſtence of the human ſpecies, the world, the ſuns, planets, and thoſe magnificent beings and objects, that are the light and ornament of exiſtence, to the trifling limits of a few thouſand years? They have gazed at monuments of literature, the written mountains of the Eaſt, at the hieroglyphics and the pyramids of Egypt. They have adopted as wonders of antiquity, the labours of men, that exiſted but a few cen-

centuries before themſelves. The records of immediate predeceſſors they have made the bounds of antiquity. Children of a day, they have given but a day to the exiſtence of nature!

Prejudices too, which they are diſcerning enough to cenſure in others, lord it over their finer underſtandings. They laugh at the errors and incoherent notions of the reſt of the world; yet inexcuſeably are they captivated with ſimilar deluſions. Enemies to liberal inveſtigation, when the reſult of it would ſeem to contradict their favoured opinions, they prefer with a blind and unlimited confidence, the barbarous tenets of their uncivilized anceſtors. As if incapable of diſtinguiſhing obvious and ſimple truths from the moſt glaring contradictions and abſurdities, they eagerly embrace the groſſeſt dreams and ſuperſti-

tions

tions of the darkeſt ages! They make but of ſome thouſand years exiſtence, the animals and vegetables, the human ſpecies, the world itſelf, the innumerable ſuns, thoſe orbs of light, that, enlivening with their genial influence admiring exiſtences, illumine ſyſtems of planets, and blaze in the ſpacious regions of the univerſe! And though every ſplendid and ſurrounding exiſtence, and inſulted nature, as it were, riſes up in vindication of herſelf, and in contradiction to their contracted and ill-founded ſpeculations; yet attached to the folly and prejudices of their ſuperſtitious and intolerant predeceſſors, they refuſe their aſſent to truths the moſt ſublime and unqueſtionable; and are even diſpoſed to cenſure thoſe who vindicate the dignity and magnificence of exiſtence,—the cauſe of nature and of truth! Let me add monuments of the extenſive influence of folly,

folly, and of the weakneſs and limited reach of human underſtanding are innumerable.

A ſucceſſion of events, ſomething ſimilar to what is continually obſerved, has *ever* taken place; nature having, through an eternal period of duration, acted by laws fixed and immutable. In the extenſive circle of exiſtence, therefore, in vain do we ſeek for the beginning of things. How fruitleſs every recourſe to calculation on the ſubject of the ſtars and nature's firſt exiſtence! The ſtretch of human conception neceſſarily fails us, multiplied ſeries of numbers, of which we cannot poſſibly have any adequate idea, unavoidably ſtop ſhort and leave the matter removed at an unlimited diſtance.

In a word, there have *ever* been ſuns, worlds, and intelligent exiſtences, to contemplate

plate and to admire them. Exiſtences tranſcendently powerful and dignified, and endued with an extent of wiſdom and underſtanding, that far ſurpaſſes the utmoſt efforts of our conception!

And as there never was any beginning to *the* ſtars, the planets, and the univerſe, ſo, *The ſtars ſhall never fade away, nor nature ſink in years!*

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SECTION

The Twenty-fourth.

THE fleeting traditions of mankind,—the exiſting monuments of literature,—the veſtiges of paſt and ſubverted civilization,—the ſummits of the aſpiring mountains, the deep receſſes of the world, and the impreſſions of animated exiſtences in the ſtones and foſſils there preſented to our inſpection,—the production and diſſolution of the objects of exiſtence,—the extinguiſhed veſtiges of volcanos,—the ſea's perpetual change of ſtation,—the earthquakes and convulſions of nature,—

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the ſun's alteration in its influence on the globe,—the ſtars, worlds, and exiſtences, that compoſe the viſible univerſe,—the nature and ſplendour of exiſtence, have hitherto been the important objects of our admiration and attention. And from every appearance of that ſplendid and ſtupendous univerſe, of which the ſun, its attending planets, the world that we inhabit, and even the ſtars that come within the ſphere of our obſervation, are but ſmall yet neceſſary parts, having unavoidably been induced to conclude, that having never had any beginning, they will never have any termination, but *ever* have exiſted and *ever* will exiſt. It remains to offer a few abſtracted arguments in ſupport of the eternity of ſuns, worlds, and their inhabitants, or thoſe ſublime and immenſe objects of exiſtence, that occupy immeaſurable

ſpace,

ſpace, and that are the bright and magnificent component parts of the univerſe.

By nature man is impreſſed with an attachment to himſelf, and to his own ſpecies, of the warmeſt kind. This ſtamp of nature's hand is, indeed, inſeparable from life; actuated by its influence, we cultivate every thing that ſeems to have a tendency to make ourſelves and others happy. But this principle, great and eſtimable as it is, improperly influencing our judgment in abſtruſe and important ſpeculations, will lead us into concluſions ill-founded and erroneous.

It is this prevailing love of human life, and an attachment to whatever may be thought to reſemble it, which has ſeparated man at ſo great a diſtance from the beautiful and ſplendid objects of exiſtence, which

which has led him too, to perſonify his own faculties and affections, and to produce ſuch perſonifications as the cauſes of the univerſe. Aſk the undiſtinguiſhed maſs of people, how things came into exiſtence, and for what purpoſe they exiſt? They will diſgrace the tranſcendent magnificence of nature, by giving you a deſcription of qualities the moſt eſtimable in themſelves, by ſomething ſimilar to which but more powerful they tell you, that every thing was fabricated; and they will even go ſo far as to add, all for our own particular uſe and accommodation. Thus the globe that we inhabit, the exiſting ſuns and worlds, their infinity of inhabitants, the bright and ſublime objects of the univerſe, have been viewed in the erroneous light of a machine, reſembling human art and contrivance, or of a manſion fitted up

for the general preſervation of animal and vegetable life.

As far as poſſible, in our reſearches after truth, we ſhould ſteer clear of circumſtances which miſlead and faſcinate the judgment. Let me then forſake this beaten track, and again venture to aſſert, THAT THE HUMAN SPECIES, THE WORLD, THE SUNS, PLANETS, AND THE SUBLIME INTELLIGENT BEINGS AND OBJECTS OF THE UNIVERSE, HAVING NEVER HAD ANY BEGINNING, HAVE EXISTED WITH THEIR VARIOUS MODIFICATIONS UNCAUSED THROUGH ALL ETERNITY.

In vain is it urged in oppoſition to this intereſting concluſion, that the order and exquiſite arrangements every where conſpicuous, the curious adapting of means to ends throughout the univerſe, reſembles, though it infinitely ſurpaſſes, the

works of human ſtructure and contrivance, or the productions of human deſign, thought, wiſdom and intelligence; and that as the effects reſemble each other, the cauſes alſo reſemble.

Nature having combined, according to eternal laws, the human fabric, ſo organized as to produce a poem, watch, houſe, or machine of exquiſite art and contrivance, has been in fact the cauſe of ſuch productions. They can but be conſidered as effects reſulting from the human conſtruction, or as alterations made by one part of nature upon another; and ſuch effects and alterations are far from being proofs, that nature herſelf was thus originally fabricated.

For as the order diſplayed in watches, houſes, and machines of human art and contrivance, is an effect of reaſon and

intelligence; and as that reaſon and intelligence proceed from the curious organization of the brain, nerves, and intricate conſtruction of the human fabric, it neceſſarily follows, that the ſuperior reaſon and intelligence, or the faculties, be they what they may, that could produce the univerſe, ſo tranſcendent in its ſublimity, intelligence and magnificence, and ſo ſuperior to the works of human ſtructure and contrivance, muſt be the effect of an organization, or of exiſtences, ſtill more curious and intricate, than the ſublime and the bright objects of the univerſe, which they are ſaid to have produced. Whence came this ſuppoſed order and magnificence, more exquiſite than the intelligent and beautiful objects of exiſtence? We relinquiſh the univerſe, than which nothing can poſſibly be more magnificent, and of whoſe exiſtence we are moſt undoubtedly convinced, becauſe there is *too much* deſign, brilliancy,

intelligence and magnificence viſible. And we go in ſearch of uncauſed exiſtences, of which the ſenſes can have no teſtimony, and, of what is utterly impoſſible, ſtill greater deſign, intelligence and grandeur to remove the difficulty! Ought then this reaſoning to be dignified with the title of right reaſon? Can it ever be convincing to one poſſeſſed of a ſound mind and underſtanding, or who is accuſtomed to diſtinguiſh truth and ſound reaſoning from fallacy? Weak, as ſuch arguments muſt appear, and baſeleſs as their foundation is, they are nevertheleſs the arguments and foundation, upon which mankind muſt ever reſt, what they are at preſent diſpoſed to conceive, their moſt important and beſt founded concluſions. Were the univerſe *not infinitely* ſplendid and magnificent, but capable of receiving acceſſion to its deſign and grandeur: Yet if the want of a cauſe equal to its production could be an objection to its eternal exiſtence;

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the want of a cauſe equal to the production of ſuperior magnificence, muſt be a ſtill ſtronger objection. Something does exiſt; and as nothing could produce nothing, ſomething muſt have exiſted uncauſed from all eternity. THAT UNCAUSED EXISTENCE IS THE HUMAN SPECIES, THE SURROUNDING WORLDS, THE SUPREME INTELLIGENCES AND EXISTENCES; TOGETHER WITH THOSE FOUNTAINS OF LIGHT AND LIFE, THE INNUMERABLE SUNS, THAT BLAZE IN THE WIDE EXPANSE OF THE UNIVERSE, WITH LUSTRE UNDIMINISHED AND ETERNAL!

Thus muſt it moſt evidently appear, that every ſtep we advance beyond the univerſe, is relinquiſhing a ſublime, an infinite, and certain exiſtence in ſearch of an exiſtence removed from the evidence of our ſenſes. And in proportion too, as we advance in ſuch ſpeculations, in that proportion muſt we ever

increaſe our difficulties. For again let me obſerve, that the uncauſed exiſtences which could produce the univerſe, itſelf *infinitely* ſplendid, ſuperb and intelligent, muſt, were it poſſible, be ſtill more wonderful and ſuperb than that univerſe or nature, which they are ſaid to have produced. And conſequently there is greater difficulty in conceiving them *ſelf-exiſtent*, than in conceiving the unbounded and ſtupendous univerſe *ſelf-exiſtent*. As the only objection to its ſelf-exiſtence muſt be, that it contains *too much* deſign, ſublimity, intelligence and grandeur viſible. Fallacious then as all ſuch arguments moſt certainly are, they are yet the only arguments that can be made uſe of to prove, that influences unconnected with, and foreign to the univerſe, have produced the bright, the magnificent and the intelligent beings which compoſe it; and that ſuch influences reſemble human mind and intelligence.

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SECTION

The Twenty-fifth.

IN vain therefore, do we inſiſt upon the diſcoveries in philoſophy and aſtronomy, that open the aſtoniſhing magnificence of exiſtence, or the diſcoveries by microſcopes, which ſuggeſt to us the moſt extended animation, and diſplay, as it were, a world in miniature. In vain, with extaſy, do we dwell on the ſublime and viſible univerſe, the ſtars and thoſe innumerable bright intelligences and exiſtences that preſent themſelves to the ſight or to the imagination. In vain too do we contemplate the animal œconomy, the

exquiſite arrangements of its parts, and the uſes to which thoſe parts are appropriated. For the tranſcendent deſign, intelligence and beauty every where conſpicuous in the planetary ſyſtems, the order diſplayed in the animal œconomy, and in every department of nature, I have found to be the ſtrongeſt arguments in ſupport of the eternity of the world, and of the bright and intelligent objects of the univerſe. Without the exquiſite and admirable arrangements ſo univerſally apparent, could things for a moment exiſt as they do? Were it poſſible to deſtroy this arrangement ſo viſible in nature, we ſhould ſtrike at her exiſtence. For inſtance, take away this adjuſtment of parts in animals, and the animals no longer ſurvive. The materials, however, or ſubſtances of which ſuch animals were conſtituted, embracing ſome ſublime intelligent order and exiſtence, ſtill ſupport the beauty of the univerſe.

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In the place then of bringing the order, the ſplendour, the arrangement, the magnificence and the intelligence of the objects of exiſtence, as proofs of their not having exiſted from eternity, we ought to be ſatisfied how abſolutely impoſſible it is, that, in the ſmalleſt inſtance, they ever ſhould admit of any other order and arrangement. We know little of the qualities of matter; we ſee, that though it is perpetually in action, and though all nature is ſubject to changes and revolutions, yet a ſameneſs of the whole is continually preſerved. The ſuns emit the particles of light to ſurrounding planets, yet have they reſources to recruit the waſte, and ſhine with undiminiſhed brightneſs. And though the matter of which ſuns and planets are thus compoſed, communicates with and circulates throughout the univerſe; yet ſuns and planets vary not in ſplendour, number, nor in magnitude.

nitude. In ſhort, the animals and vegetables, and the parts of animals and vegetables, are continually changing. And the particles conſtituting the earths, ſtones, and minerals, and other exiſting ſubſtances, are likewiſe in conſtant fluctuation. Yet the animals and vegetables, the earths, ſtones and minerals, and the ſubſtances conſtituting the univerſe itſelf, remain *eternally* the ſame.

The revolutions of ſociety, the contentions of nations, the downfall of empires extinguiſh not the human ſpecies. Nor are the animals and vegetables, and ſublime intelligent exiſtences of the univerſe, in any degree threatened with total extermination. It is true, extraordinary operations of nature at times partially affect their exiſtence; but tumultuous ſcenes of devaſtation and calamity, are uſually ſucceeded by ſerene and

and happy periods of tranquility, that compenſate for deſtruction, and give ample ſcope to fertility and population.

In a word, the eternal formation and decay of the exiſting ſubſtances, the unceaſing circulation of matter that has been ſo copiouſly explained, produces no diſorder. Infinity of beings exult in their exiſtence but for a day, then droop and change the mode of that exiſtence. Yet do they each of them have their different forms and ſpecies, equally numerous and flouriſhing. So intimately too are all things connected in the ſyſtem of the univerſe, that one part of nature decays and haſtens to repair the depredations that time produces on another. The moſt perfect ſympathy is every where preſerved. Order and regularity reſult from ſeeming confuſion. And each individual or portion of exiſtence,

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in exerciſing its functions and propenſities, acts as well to the ſupport of its own being, as to that of the univerſe.

And ſo far is the ſplendour, the ſublimity, the intelligence and magnificence, univerſal and apparent; and the beautiful order and diſpoſition of the ſeveral parts that compoſe the ſtupendous whole, from being an objection to an unbounded ſucceſſion of events; we have ſeen that they may undoubtedly be brought as the ſtrongeſt confirmation of ſuch a doctrine. It being far eaſier to conceive the univerſe to exiſt as it is, and to contain eternal order and regular diſpoſition within itſelf, than to attempt to add luſtre to what is already *infinitely* ſplendid and magnificent, by having a viſionary and ſpeculative recourſe to the perſonifications of our faculties and affections; which, after all, muſt be allowed to be eternal and

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ſelf-exiſtent. And let me once more repeat, that if deſign, brilliancy, intelligence and magnificence were an objection to an eternal exiſtence and duration of things, it is unreaſonable, were it poſſible, to increaſe that deſign and magnificence to remove the objection. As ſomething always has exiſted, or muſt have been eternal, why not pay a deference to the bright and magnificent intelligences and objects, of whoſe exiſtence we are certain? The world, the univerſe itſelf, are compoſed of moveable particles qualified for eternal agitation. Particles too, which as they mutually attract each other, nothing can be annihilated, loſt, nor removed without occupying ſome place. If then numerous modifications of matter thus exiſt, if ſimilar events to thoſe already deſcribed daily do take place, *what in the conſtitution of things, ſhould hinder*

der ſuch events from having always happened?

THUS IS THE UNIVERSE COMPOSED OF AN INFINITY OF BRIGHT, SUBLIME AND INTELLIGENT EXISTENCES. AND THUS DOES NATURE SUPPORT HERSELF! And ſhe will *ever* continue to ſupport herſelf in the ſame manner as we now behold her. In the alternate deſtruction and renovation, thoſe ſucceſſive viciſſitudes that have been ſo often explained; and in that torrent of time which carries off and abſorbs the individuals and objects of exiſtence, nothing is to be perceived but her permanence and ſtability. Her laws are, indeed, *eternal* and immutable. The ſprings ſhe employs are active forces, which time can never deſtroy. Forces which balance, mix, and oppoſe without being able to annihilate each other. A day, a year, an age,

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conſtitute no part of her exiſtence. They relate to beings whoſe exiſtence is changeable and tranſitory. To change, to deſtroy, to unfold, to renew, are her peculiar excellences. She alters no part of her *eternal* plan. Her features are indeed expreſſed in characters ſo ſtrongly marked, that nothing can poſſibly efface them. And the number of copies or impreſſions of her fluctuating modifications, though infinite, inſtead of impairing, only renew her energy. A principle of animation and intelligence, pervades her apparently inanimate productions, which, being perpetually in action, admit of changes regular and uniform. And as the vegetables flouriſh and decay, and men receive the ſpark of life, with which they triumph for a time, then fading die, or change the mode of their exiſtence and felicity, ſo they have *ever* done, and *ever* will do.

SECTION

The Twenty-ſixth.

YET while I thus contend that earths, ſtones, and minerals, animated productions, and the beings conſtituting the globe that we inhabit, are *eternal* and *ſelf-exiſtent*. And that ſtars, and the other bright objects of the univerſe, have *ever* ſhone with undiminiſhed luſtre, and will *ever* continue to diſpenſe their light to grateful and admiring exiſtences: I would by no means be underſtood to detract from, but to exalt the dignity and ſplendour of exiſtence. Every excellence that the warmeſt

advocate for the received opinions, is diſpoſed to grant to the objects of his wonder and admiration, I GIVE TO THE ESSENTIAL QUALITIES, AND TO THE DAZZLING LUSTRE OF THE UNIVERSE! TO THE SUBLIME, THE BRIGHT BEINGS AND DIVINITIES THAT COMPOSE IT—TO THE SUPREME WISDOM, GOODNESS AND INTELLIGENCE! I DISPUTE NOT, BUT WOULD ARDENTLY AND SINCERELY WISH, TO CONFIRM MANKIND IN A BELIEF OF THE EXISTENCE OF WHAT IS TRANSCENDENTLY GREAT, POWERFUL, AND GOOD. THE MODE OF THAT EXISTENCE IS WHAT I ALONE CONTEND FOR. And though the ſuperſtitious and leſs eſtimable part of the Europeans, and the ſtates planted by them in the different regions of the world, may ſtartle at the ſyſtem, yet were I diſpoſed to flatter their prejudices, by lying an improper ſtreſs upon the juſt obſervations of

a man diſtinguiſhed for his ability, and who it muſt be confeſſed, conſidering the barbarous age in which he exiſted, ſeems to have been endued with uncommon and elegant ideas, I might tell them, that one of thoſe, whom they have been taught to look up to, as the wiſeſt of mankind, has declared for the eternity of all things. EMPHATICALLY AND TRULY IT HAS BEEN SAID BY HIM, "THAT THERE IS NOTHING NEW UNDER THE SUN; THAT THOUGH THE RIVERS RUN INTO THE SEA, YET THE SEA RETURNS THEIR WATERS; THAT ALL IS FULL OF LABOUR; THAT AS ONE GENERATION GOES, ANOTHER COMES; AND, THOUGH THINGS FLUCTUATE AND CHANGE, THAT THE WORLD LASTS FOR EVER!"

AND SO FAR IS THIS DOCTRINE FROM LEADING ME TO QUESTION A STATE OF FUTURE, AND INCONCEIVABLE SPLENDOUR, INTELLIGENCE, AND

FELICITY, THAT IT ESTABLISHES IT. THINGS NEVER REST, BUT CHANGE FROM ONE STATE OF ORDER, WISDOM, AND EXISTENCE, TO ANOTHER; FROM OUR PRESENT, OBSCURE, IMPERFECT, AND CALAMITOUS STATE, THERE IS NOT THE SMALLEST REASON TO DOUBT, BUT THAT WE SHALL CHANGE TO ONE TRANSCENDENTLY SUBLIME, AND BRIGHT WITH SUPERIOR INTELLIGENCE.

Nor in a moral point of view can it operate otherwiſe than to the advantage of mankind. By tending to ſubvert the folly, ſuperſtition, and prejudices of the times, it will teach us to diſtinguiſh moral excellence from vices dignified with that title; and to regard as injurious to ſociety, thoſe falſe and dangerous tenets, which occaſion us to look upon as leſs eſtimable than ourſelves, not only that part of the world, which differs from us in trifling ceremo-

nies and obſervances, but thoſe myriads of the human ſpecies, and innumerable beings, who either never heard of, or totally reject our crude and intolerant doctrines and ſuperſtitions. The moral obligations have their foundation in the nature of things,—the preſervation of the principle of life, and the relative ſituation of man in ſociety. An innate ſenſibility leads to the conſciouſneſs of good and evil. And ſo far are adventitious ſyſtems, or the dreams of ſuperſtition, from aſſiſting us in embracing the one and rejecting the other, that they moſt materially injure the cauſe of virtue, by rendering the characters of good and evil leſs perſpicuous and diſtinct. What pleaſure ſo exalted as the pleaſure of doing good, of contributing to the happineſs of mankind, and ſympathizing with our fellow creatures! True felicity, and enjoyments even more exqui-

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ſite than thoſe derived immediately from the ſenſes, flow from this ſource! The ſame ſympathy and affection too, which thus teaches us to love and feel for our fellow creatures, and to be intereſted in their welfare and felicity, reproaches us when we neglect or behave ill to them—hence remorſe of conſcience! In ſhort, what is virtue, but cheriſhing the principle of life, and promoting ſocial happineſs! Whatever has a tendency to ſtrike at our exiſtence, or which amounts to the ſame thing, operates ſo as to make ourſelves and others miſerable, is vice. Thus the moſt virtuous man is he, who is endued by nature, with the happieſt powers of communicating felicity to others, and enjoying by reflection the pleaſures of doing good. And as the higheſt ſource of human enjoyment, is the pleaſure of pleaſing, of contributing

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to the happineſs of mankind, and of ſympathiſing with our fellow creatures, even in this world virtue is its own beſt reward, and vice its own ſevereſt puniſhment; for the vicious man, though he were to eſcape every other puniſhment due to his crimes, muſt ſuffer for a vicious action by remorſe; or, if he be loſt to ſympathy and contrition, it argues a deficiency of ſenſibility and reaſon; and is the moſt convincing proof, that he is incapable of enjoying the refined and exalted pleaſures of virtue.

Thus, though through the whole diſcuſſion of this ſublime and intereſting ſubject, I have endeavoured to demonſtrate an infinite ſucceſſion of ages, to point out the fluctuation of matter, the continued revolutions of beings and events; though totally unmindful of opinions vague and erroneous, however tenaciouſly maintained

tained or univerſally adopted; and heedleſs of the received and contradictory traditions as to the origin of the human ſpecies, the ſurrounding worlds, and the other bright and magnificent objects of exiſtence; I have been induced, from a candid view of natural facts, and every appearance of nature to conclude, that as there never was, any *beginning*, ſo will there never be an *end* to thoſe ſuns, worlds, and exiſtences, that occupy infinite ſpace; that diſpenſe their light and genial influence through the ſpacious regions of the ſky, and that are the ornament of an univerſe tranſcendently bright and magnificent. YET BY THUS ENDEAVOURING TO ESTABLISH THE ETERNITY OF THE UNIVERSE, AND RESTING THINGS UPON THEIR OWN CERTAIN AND SUBLIME FOUNDATION, I HAVE BY NO MEANS BEEN LED TO DISPUTE, BUT MOST STRENUOUSLY, THOUGH INADEQUATELY,

QUATELY, TO ENFORCE THE ASTONISHING SPLENDOUR AND MAGNIFICENCE OF EXISTENCE. AND SO FAR ARE THE ARGUMENTS THAT I HAVE MADE USE OF, FROM HAVING THE SMALLEST TENDENCY TO DAMP OUR GREAT AND ONLY CONSOLATION, THE UNIVERSAL ANIMATING EXPECTATION OF FUTURE BEING, SPLENDOUR AND FELICITY, THAT THEY OPEN THE MOST BRILLIANT AND PLEASING PROSPECTS OF AN INDISPUTABLE BRIGHT, PERMANENT, AND INTELLIGENT STATE OF FUTURE AND INCONCEIVABLE HAPPINESS; THEY ENFORCE THE EXCELLENCE OF MORAL RECTITUDE; AND THE EXISTENCE OF A SUPREME BEING—INFINITE IN WISDOM, GOODNESS, AND INTELLIGENCE.

THE END.